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Series B
TAXONOMY
(being the continuation of Stylops)

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SOME EARWIGS (DERMAPTERA) FROM NEW ZEALAND.

By W. D. Hincks, M.P.S., F.R.E.S.

(*Manchester Museum.*)

The Dermaptera of New Zealand are very little known and my records (which, however, may be incomplete) indicate that only eight species appear to have been recorded. These are as follows :

Labiduridae : **Euborellia annulipes* (Lucas), *Anisolabis littorea* (White), **A. maritima* (Géné), **Labidura riparia* (Pallas), *Parisolabis novaezeelandiae* Verhoeff, *Pseudisolabis walkeri* Burr.
Chelisochidae : **Chelisoches morio* (Fab.).
Forficulidae : **Forficula auricularia* L.

The species marked with an asterisk (*) are cosmopolitan. The remaining are all endemic species at present unknown outside New Zealand. The family Pygidicranidae is unrepresented, as one would expect, but it is surprising that no members of the Labiidae (such as the cosmopolitan *Labia minor* (L.), *Labia curvicauda* (Motschulsky) and *Prolabia arachidis* (Yersin) appear to have been noted as occurring in New Zealand. This deficiency is somewhat reduced by the addition of three species belonging to the Labiidae in the present contribution which is based on a small collection of 26 specimens kindly forwarded for determination by Dr. W. J. Hall, M.C., Director of the Commonwealth Institute of Entomology, to whom I wish to record my indebtedness for the opportunity to study this material. Seven species are represented, of which no fewer than three are additions to the meagre New Zealand list. Of these additions, one species is new to science (*Nesogaster halli*), the second is an Australian species (*Chaetospania brünneri* (Bormans)), and the third is unfortunately represented by a single female which can only be referred to the genus *Labia* in its widest sense until male specimens are forthcoming.

Labiduridae.

Anisolabis littorea (White, 1846).

Forficula littorea White, 1846, Voy. " Erebus " and " Terror," Ins. : 24, pl. 6, f. 4, 5.

New Zealand : Owairaka, 1 ♂, 9.iv.1940 (*D. Spiller*) ; Great Barrier Is., 1 broken spn. xi.1940 (*D. Spiller*).

Under the name of *Forficesila littorea* (White) this is the only earwig recorded in F. W. Hutton's *Catalogues of the New Zealand Diptera, Orthoptera, Hymenoptera* (Wellington, 1881). It is an abundant maritime species restricted to New Zealand.

Labidura riparia (Pallas, 1773).

Forficula riparia Pallas, 1773, *Reise Russ. Reichs.* **2** : 727.

NEW ZEALAND : Auckland, 1 ♂, 1939 (*D. Spiller*) ; Owairaka, 1 ♂, 1 ♀, 5.ix.1940 (*D. Spiller*), 1 ♂. 1 ♀, same locality, under sacking, 3.vii.1940 (*D. Spiller*) ; Great Barrier Is., 1 ♀ under shore rubbish, 23.xi.1940 (*D. Spiller*).

The above specimens are the *truncata* (Kirby) variant of *L. riparia*, which is the dominant form in Australia. The distribution of *L. riparia* is world-wide and many local forms, feebly differentiated, occur in different parts of its range.

LABIIDAE.

Nesogaster halli sp. n. (Figs. 1–3.)

Of average size for the genus.

Male.—General *colour* brown, shining, almost hairless ; legs, antennae and palpi dirty testaceous ; forceps and ground colour of head reddish testaceous, latter with broad, transverse, dark brown patch extending from the middle of one eye to the other with its posterior margin abrupt and convex, enclosing, just above the clypeus, a median triangular spot of reddish testaceous and a pair of similarly coloured circular spots placed singly on the inner side of the antennal sclerite. The caudal portion of head is dark brown laterad with an isolated oblique dark brown line running from the inner angle of eye to caudal margin of head. The wing tips have an obscure longitudinal dark bar adjacent to, but not quite touching, inner margin.

Head tumid ; median longitudinal suture distinct ; transverse sutures wanting ; eyes large, coarsely facetted, longer than cheeks and basal antennal segment ; occiput contracted behind eyes ; caudal margin very slightly sinuate. *Antennae* 13-jointed (an additional terminal segment may have been lost), all segments from third elongate club-shaped ; third longer than either fourth or fifth ; fourth shorter than fifth ; fifth onwards more or less subequal in length. *Pronotum* narrower than head, but about the same length ; a little broader caudad than cephalad ; nearly truncate caudad and cephalad ; pro- and metazona not markedly differentiated ; sides moderately reflexed ; caudal angles rounded. *Tegmina* ample, nearly twice as long as pronotum, wider than head, shoulders rounded, sides a little contracted caudad, caudal truncature slightly concave, lateral keels strong and complete. *Wing scales* prominent, nearly as long as pronotum. Sculpture of pronotum, tegmina and wing scales almost absent. *Abdomen* broader than tegmina at tergites 7 and 8, surface sculpture slight ; ultimate tergite somewhat narrower, transverse, plane above with fine scattered puncturation ; caudal margin slightly reflexed above pygidium. *Pygidium* not prominent, subquadrate, deflexed. *Forceps* distant, without flanges or teeth, broader at base, gradually tapering to about half their length then more or less cylindrical to slightly hooked apices ; curvature of forceps slight, enclosing a very elongate oval space ; lower inner edge with minute crenulations basad. *Penultimate sternite* ample, broadly rounded with a very slight median emargination. *Legs* as described for the genus. *Genitalia* (see fig. 2).

Length.—5–6 mm., excl. forceps ; forceps 2–3 mm.

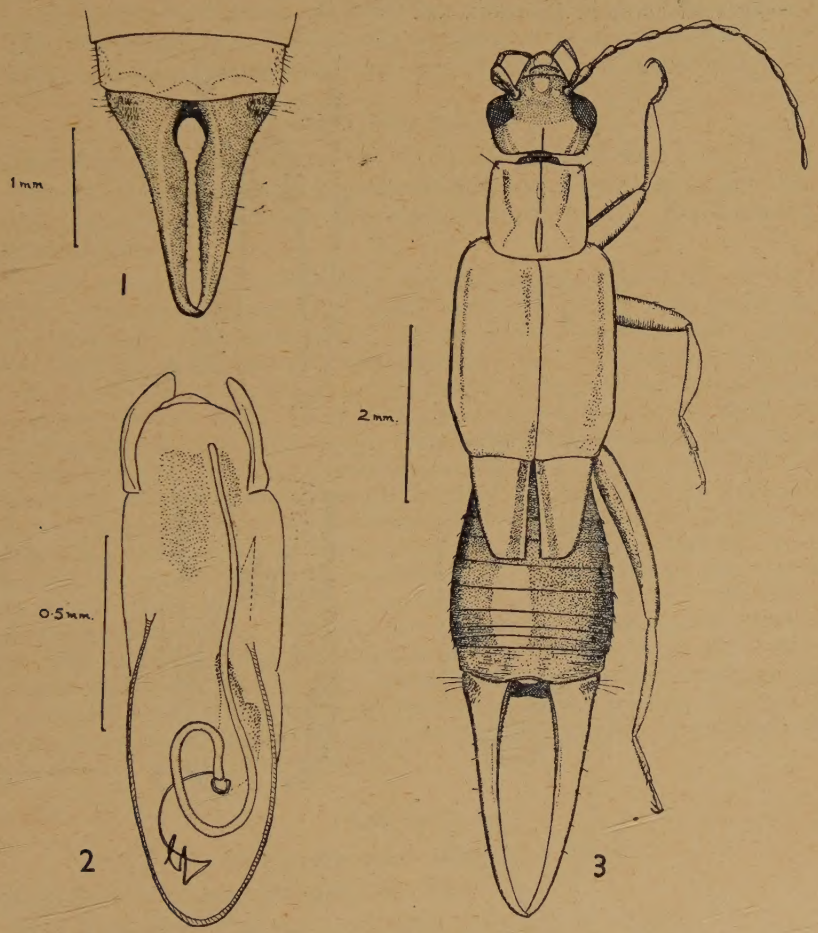
Female.—Agrees with male in almost all characters except that the head is solidly dark brown, the pronotum is dark brown with the lateral areas lighter. Ultimate tergite somewhat depressed mesad, its margin hardly reflexed. Pygidium almost hidden. Forceps distant at base and rather broad, then rather angularly approximated close to base, thence gradually tapering with their inner margins almost touching and rather coarsely crenulate. Penultimate sternite less ample than that of male, free margin rounded.

Length 6–8 mm., excl. forceps ; forceps 2 mm.

Holotype, male, NEW ZEALAND : Titirangi, taken in flight, 9.iv.1945 (*M. W. Carter*) ; Allotype female, Titirangi 12.iii.1945 (*M. W. Carter*). Both speci-

mens in the collection of the British Museum (Nat. Hist.). Paratype male, Titirangi, iii.1944 (*M. W. Carter*); paratype female, Mt. Albert, Auckland, 29.ix.1941, sieved (*D. Spiller*), both in the writer's collection.

This distinct species is named after Dr. W. J. Hall, M.C., Director of the Commonwealth Institute of Entomology, London. It agrees closely with Burr's generic diagnosis (1908 : 43, repeated 1911 : 48). In several species of

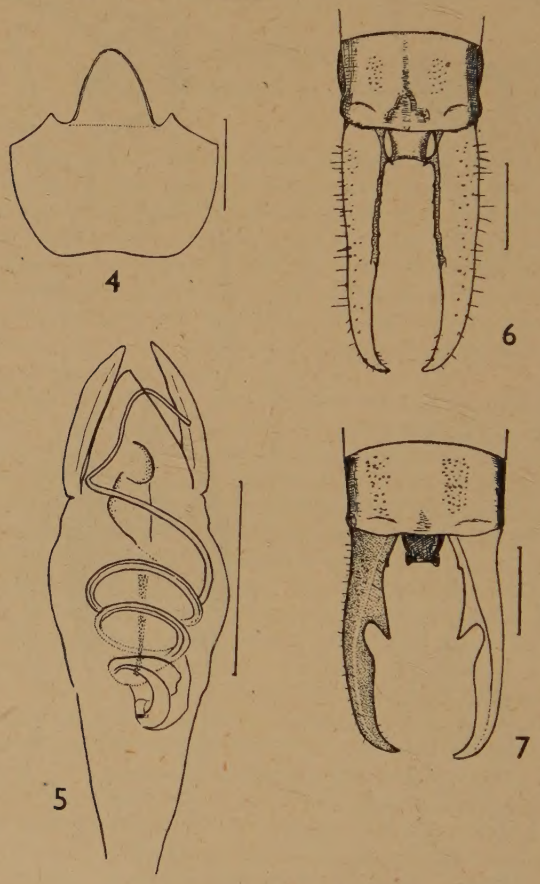


FIGS. 1–3.—*Nesogaster halli* sp.n. (1) Female forceps; (2) male genital armature; (3) male.

the genus the pygidium is very prominent in the male, but in some it is much reduced as is the case in the present species. From these species (*N. dolichus* (Burr, 1897), Celebes, *N. wallacei* Burr, 1908, Celebes, *N. tristis* (Bormans *in* Burr, 1903) New Caledonia, *N. pulchripes* (Bormans *in* Burr, 1903) Australia, and *N. papuus* (Bormans, 1900) New Guinea, it differs in the male by a combination of the distinctive coloration of the head, fully developed wings

and tegmina and the simple forceps. Recently (1946) Rehn has described five new species of *Nesogaster* and a single new species has been added by Hincks (1947), but all have the pygidium long and consequently do not require comparison with the present species.

The genus *Nesogaster* is an interesting one widely distributed in the Oriental Region, reaching the Palaearctic in Japan and strongly represented in the Papuan subregion (whence I have several new species awaiting description) with weaker offshoots in Australia and Oceania.



FIGS. 4–7.—*Chaetospania brünneri* (Bormans). (4) Penultimate sternite and manubrium of male; (5) male genital armature; (6) female forceps; (7) male forceps. The line represents 0·5 mm.

Chaetospania brünneri (Bormans, 1883). (Figs. 4–7.)

S(*paratta*) *brünneri* Bormans, 1883, *Ann. Soc. ent. Belg.* **27** : 69, pl. 2, f. 9 (♂♀, Australia Rockhampton).

NEW ZEALAND : Hastings, 3 ♂, 3 ♀, 18.xi.1941, under pine bark (*D. Spiller*).

This series agrees well with de Borman's careful description and there can be no doubt that the identification is correct. Hitherto known as a rather

frequent Australian species, *C. brünneri* has not been recorded before outside that continent.

The genus *Chaetospania* includes a large number of small Labiids and is numerically very well represented in the Indo-Malayan region. It has once before been recorded from Oceania, whence Caudell (1927) has described *C. stoneri* from Fiji. Caudell's species appears to be closely related to the present species, but differs quite distinctly in the characters of the forceps and pygidium in both sexes.

The forceps and apical abdominal segments of both sexes and the genital armature and manubrium of the male of *C. brünneri* are shown in figs. 4–7.

Labia (sens. lat.) sp. ?

New Zealand : Mt. Albert, 1 ♀, 12.iii.1946 (*M. W. Carter*).

Unfortunately this species is represented by a unique female only, and it is therefore impossible to place it more closely with accuracy. The following is a brief description.

A small species, about 4·5 mm. long, including forceps, with all parts of the body markedly pubescent. General colour brown, moderately shining; legs testaceous with femora infuscated; head nearly black; forceps reddish; antennae brown, apparently lighter distad but all segments after tenth have been lost; third segment a little longer than fourth and fifth which are subequal in length; subsequent segments subequal and more or less ovate in shape. Head with obsolete sutures and caudal margin sinuate (as in *Chaetospania*); eyes small, shorter than basal antennal segment, barely a quarter the length of cheeks. Pronotum more or less parallel-sided, narrower than head, truncate meso-caudad, with caudal angles broadly rounded. Tegmina about as broad as head, only about one-quarter longer than pronotum, obliquely truncate caudad, depressed above, without lateral keels. Wing tips very small and only just exposed by tegmina. Abdomen rather regularly curved at sides, being narrower than tegmina at base, but considerably wider at the middle segments, thence contracted to apex; pliciform tubercles small; sides of segments not acute. Ultimate tergite transverse, truncate caudad, a little tumid above roots of forceps. Pygidium moderately prominent, its shape obscured by the contiguous forceps, the inner margins of which touch throughout their length, except that the apices are curved and crossed; the base of the forceps is broad, narrowing rather abruptly at mid-length, thence narrowing more gradually to apex. Penultimate sternite ample with free margin broadly rounded.

Chelisochidae.

Chelisoches morio (Fabricius, 1775).

Forficula morio Fabricius, 1775, *Syst. Ent.* : 270.

New Zealand : Titirangi, 1 ♂, 25.iv.1943 (*M. W. Carter*).

This cosmopolitan insect is particularly widely distributed in Oceania (Hincks, 1938, The Dermaptera of Oceania, *J. F. M. S. Mus.* **18** : 312).

Forficulidae.

Forficula auricularia Linnaeus, 1758.

Forficula auricularia Linnaeus, 1758, *Syst. Nat.* Ed. X, **1** : 423.

New Zealand : Blenheim, 2 ♂, 2 ♀, 9.ii.1942 (*D. Spiller*); Havelock, ex codling banding, 1 ♂, viii.1946 (*W. Cottier*); Invercagill, 1 ♀, 28.ii.1942 (*D. Spiller*).

A relatively recent introduction into Australia and New Zealand, doubtless from Europe.

References.

Burr, M., 1908, Notes on the Forficularia: X, A Revision of the Nesogastrinae. *Ann. Mag. nat. Hist.* (8) **1** : 42–47.

——, 1911, Dermaptera *in* Wytsman, *Genera Insectorum* **122** : 1–112, 9 pls.

Caudell, A. N., 1927, Report on Orthopteroid Insects of Fiji and New Zealand. *Univ. Iowa Stud. nat. Hist.* **12** (2). 22 pp.

Hincks, W. D., 1947, Dermaptera from the New Hebrides and Lord Howe I. *Ent. mon. Mag.* **83** : 65–67, fig. 1.

Rehn, J. A. G., 1946, Five new species of earwigs of the Indo-Pacific genus *Nesogaster* (Dermaptera: Labiidae: Nesogastrinae). *Proc. Acad. nat. Sci. Philad.* **98** : 219–38, 11 figs.

Book Notices.

Gall Midges of Economic Importance. By H. F. Barnes, M.A.(Oxford), Ph.D.(London). 8vo. London (Crosby Lockwood & Son, Ltd.), 1948. Vol. III, *Gall Midges of Fruit.* Pp. 184, 9 half-tone plates. Foreword by A. M. Massee, D.Sc. Price 15s. Vol. IV, *Gall Midges of Ornamental Plants and Shrubs.* Pp. 165, 8 half-tone plates. Foreword by G. Fox Wilson, N.D.H. Price 15s.

These two volumes bring the series halfway to its conclusion. The previous arrangement is continued, the host-plants being dealt with in alphabetical order. Under each plant are listed the gall midges attacking it, also in alphabetical order. The standard subheadings under each species are: Diagnostic character; Damage; Description; Distribution; Life-history; Food-plants; Natural enemies; Control measures. Each volume concludes with a list of references, an index of generic, specific and popular names of midges mentioned, a plant index and a general index.

A Guide to the Smaller British Lepidoptera. By L. T. Ford, B.A. 8vo. South London Entomological and Natural History Society, 1949. Pp. 230. Price 15s.

1,375 British Microlepidoptera are listed, with scientific names and synonyms. The biological notes on each species are tabulated for the four stages, ovum, larva, pupa and imago. Information given includes months of occurrence, food-plant, habitat, behaviour of larva or adult, and whether a web or a cocoon is produced.

A list of food-plants and other food substances is cross-referred to the main list, and is printed on green paper. The index of genera and species is printed on pink paper.

NOTES ON THE RHOPALOCERA OF ABYSSINIA.

By A. G. Gabriel.

(*Department of Entomology, British Museum (Natural History)*).

In his work on the Rhopalocera of Abyssinia, Prof. Hale Carpenter (1935, *Trans. R. ent. Soc., Lond.* **83** : 313–448) recorded no less than 389 species, as well as many subspecies and forms.

During the last few years the British Museum has received large collections of Lepidoptera from Abyssinia, owing to the generosity of Mr. K. M. Guichard, of the Anti-Locust Research Centre, who has devoted much of his spare time to collecting. The following notes are based entirely on these collections.

It was considered unlikely that much material new to Abyssinia would be discovered, but a number of known species were collected there for the first time and are now recorded. A few, which appear to be new, are also described in the following notes.

I am indebted to Mr. Guichard for supplying the field notes which are incorporated below and for detailed information concerning the localities, a list of which will be found at the end.

Brigadier W. H. Evans, C.S.I., C.I.E., D.S.O., kindly identified the Hesperiidae.

Neocoenyra duplex Butler.

Neocoenyra duplex Butler, 1885, *Proc. zool. Soc. Lond.* **1885** : 758. Somaliland.

A male and female taken on the road between Fich and Babile "in the more shady parts of dense Acacia scrub." They agree well with Butler's types.

The species is now known to occur in Somaliland, Abyssinia, Kenya and Tanganyika Territory.

Acraea pseudolycia Butler.

Acraea pseudolycia Butler, 1874, *Cist. Ent.* **1** : 213. Quanga.
Acraea pseudolycia Butler (Eltringham) 1912, *Trans. ent. Soc. Lond.* **1912** : pl. 1, f. 5.

The type specimen of *pseudolycia* is a rather small female (length of forewing 27 mm.), which agrees well in colour and markings with Eltringham's figure of the male (*op. cit.*).

Acraea pseudolycia astrigera ♀ f. **auasa** forma n. (pl. 1, fig. 2).

Four females were obtained which appear to differ from any known form.

Upperside.—Both wings grey with a faint tinge of green.

Underside.—Both wings greenish grey, somewhat paler on the hind wing; a series of reddish pink markings beyond the basal black area.

On both upper and undersides the markings are as in *astrigera*.

♀. *Holotype* B.M. No. Rh. 15106, Lake Auasa, 19.iv.1948.

Acraea guichardi sp. n. (pl. 1, fig. 3).

Male.—Antennae black; head black with a patch of grey hairs between the eyes and two patches of golden brown hairs behind the eyes; thorax and abdomen black, the thorax partially covered with long grey hairs; fringes brownish grey. Length of fore wing 23 mm.

Upperside.—Ground colour creamy grey; basal area of wings thickly dusted with blackish brown and golden brown scales; veins outlined in blackish brown.

Fore wing: Two transverse brownish black markings, one in the discoidal cell which does not quite reach the costal vein, and the second immediately beyond the cell along the discocellulars; a series of six brownish black markings in interspaces 1 to 6 forming an irregular postdiscal band; a brownish black streak on veins 2 to 7, these streaks increasing in width towards the outer margin where they are united by golden brown scales. Hind wing: Two irregular transverse bands formed of elongate brownish black semicircular markings between the veins; the submarginal area of wing blackish brown with a series of pale arrow-headed markings between the veins.

Underside.—Ground colour greenish grey; wing margins narrowly outlined in black; the veins outlined in blackish brown broadening towards the outer margin; the transverse markings of the upperside reproduced on underside. Fore wing: The angle between the median and lower median thickly dusted with blackish brown scales; interspaces 2 to 6 dusted with golden brown scales near the outer margin. Hind wing: Three reddish-brown spots at base of wing and three large patches of reddish brown scales forming a submedial band; a submarginal band formed of creamy white patches in interspaces 1 and 4 and a row of crescent-shaped blackish brown lunules along the outer margin.

Female unknown.

♂. *Holotype* B.M. No. Rh. 15100, W. Abyssinia, Lekempti, 6500 ft., 26.v.1946.

♂. *Paratype* B.M. No. Rh. 15101, with same data. This specimen is somewhat smaller and the discal area of the fore wing is paler on the underside. "Found around the edges of a marsh and probably confined to such localities in the valleys."

I have pleasure in dedicating this fine *Acraea* to the collector. It bears some resemblance to the female of *rahira* Boisduval, and the markings are in approximately the same position, but the wing shape is entirely different, being much more rounded.

Acraea safie Felder.

Acraea safie Felder, 1867, *Reise Nov. Lep.* : 370. S. Abyssinia.
Acraea antinorii Oberthür, 1880, *Ann. Mus. Stor. nat. Genova* **15** : 157, pl. 1, f. 3. Abyssinia.

Twenty-four males and four females of this variable species were obtained, including the typical form and form *antinorii* Oberthür, with discal spots obsolete on both wings. Three of the females are the typical form differing principally from the male in having larger discal spots. The fourth female appears to be new and is described below.

Acraea safie ♀ f. **tillini** forma n. (Pl. 1, fig. 4.)

Head, thorax and abdomen as in the typical form.

Upperside.—Fore wing: Discal area yellowish brown; extreme base of wing brownish black; outer margin and apical area of wing brownish black; inner margin narrowly edged with brownish black, broadening toward the tornus; a row of four translucent

greyish white apical markings forming a subapical band. Hind wing: discal and subapical areas of wing yellowish brown, paler beyond the cell area; a row of small indistinct brownish black discal spots; marginal area brownish black.

Underside.—Fore wing discal area yellowish brown; outer marginal and apical areas greyish black with veins outlined brownish black; apical spots as on upperside. Hind wing: discal area pale yellowish brown; a series of small brownish black spots on basal and discal areas as in the typical form; submarginal and marginal areas greyish black with the veins outlined in black.

♀. *Holotype* B.M. No. Rh. 15102, Djemdjem Forest, 8000 ft. "*A. safie* was found not uncommonly in the lower glades and near stream crossings in the forest."

Superficially, this form appears to be quite different from the other females of the species, but the spots on the underside of the hind wing and the fore wing subapical band at once indicate that it is a form of *safie*.

Acraea alciope ♀ f. *aurivillii* Staudinger.

Acraea aurivillii Staudinger, 1896, *Iris* **9** : 209, pl. 2, f. 2. Barombi, Cameroons.

A rather undersized specimen (length of fore wing 27 mm.) of this female form with white discal bands on hind wings, from Jimma, 5000 ft., 22.i.1946. Five female forms of the species are now known to occur in Abyssinia.

Euphaedra cooksoni **attenuata** subsp. n.

Male.—Antennae black with a yellowish mark near the apex of club; head, thorax and abdomen black. Length of fore wing 38 mm.

Upperside.—Fore wing: Basal half dusky chrome yellow with black scales near the base; apical half of wing black; greenish black near apex; a band of four white spots dividing the blackish and greenish black areas; two black spots in discoidal cell. Hind wing: Brownish chrome yellow; dusted with black scales in basal area; a band of inwardly dentate black spots forming a marginal band 3 mm. in width.

Underside.—Fore wing: Chrome yellow; paler in interspace 1; a subapical band of four white spots as on the upperside. Hind wing: Chrome yellow; a white streak in interspace 7 which does not reach the costal vein; two indistinct white patches beyond the cell.

Female unknown, but probably similar to the male.

Somewhat smaller than the typical form. The black area of fore wing ends at the tornus on the submedian vein and does not reach along the lower margin as in the typical form.

The hind wing white streak in interspace 7 and the marginal band much narrower than in the typical form and the chrome yellow area much paler both on upperside and underside.

♂. *Holotype* B.M. No. Rh. 15103, Didessa River, 4000 ft., 24.v.1946.

" Not uncommon, but elusive in the shady parts of the forest near the bridge over the Didessa River."

Charaxes achaemenes ♀ f. *monticola* Joicey and Talbot.

Charaxes achaemenes ♀ f. *monticola* Joicey & Talbot, 1925, *Ann. Mag. nat. Hist.* (9) **16** : 645. S. Sudan.

The female of typical *achaemenes* Felder has the basal area of the fore wing reddish brown with a bright orange yellow transverse band of spots on the upperside and the female form *monticola* has a pale ochreous transverse band.

The female now recorded from Miesso 16.x.1946, has this band white on both wings and the marginal and submarginal spots are also white.

A rather small specimen (expanse of fore wing 38 mm.) differing from the male in having larger white marginal lunules on fore wing upperside and a somewhat broader transverse band.

Pontia distorta Butler.

Synchloe distorta Butler, 1885, *Proc. zool. Soc. Lond.* **1885** : 774, pl. 47, f. 12. 80 miles S. of Berbera.

A male and female of this rather uncommon species were found flying about Mt. Fich, 8.v.1947, during the rains. They are larger than the type (length of fore wing being 19 mm. and 20 mm. respectively), and have a well-defined brownish black outer border in which are five white submarginal spots.

Pontia glauconome Klug.

Pontia glauconome Klug, 1829, *Sym. Phys.* : pl. 7, ff. 18, 19. Arabian desert.

This species has long been known to occur in Kenya and Sudan. It is, therefore, somewhat surprising that it has only now been found in Abyssinia.

Three males and four females were taken at Bitiyu, Gewani, Fich, Hawash and Danakil.

"Found flying commonly in many arid rocky localities in the southern Danakil."

Colotis pleione Klug.

Pontia pleione Klug, 1829, *Sym. Phys.* : pl. 8, ff. 7, 8. ♂, Arabia.

A series of five males and one female from the Gelalu River, ix.1946. The males all have the bright orange colour of the fore wing underside reaching almost to the apical blackish area, and appear to agree with typical *pleione* Klug rather than with *heliocaustus* Butler.

The single very damaged female has, on the upperside, dull orange basal areas becoming paler towards the outer margins.

Colotis ione ♀ f. *primularis* Talbot.

Colotis ione ♀ f. *primularis* Talbot, 1939, *Trans. R. ent. Soc. Lond.* **88** : 185. Maidugari, N. Nigeria.

Two females of this apparently rare form from Bukuru Bridge, River Hawash 15.ix.46 and Jowaha 7.viii.46.

They differ from the type in being somewhat larger (expanse of fore wing 26 mm.) and in having the blackish brown markings on upper and underside of both wings less strongly marked.

Two other specimens are in the B.M. collection from Tanganyika Territory (Manyaro and Itumba).

Colotis eucharis phillipsi Butler.

Teracolus phillipsi Butler, 1885, *Proc. zool. Soc. Lond.* **1885** : 772, pl. 47, f. 11, ♀. Duderi, Somaliland.

One rather small female (length of fore wing 16 mm.) from Jowaha, 7.viii. 1946, which agrees well with Butler's figure (*op cit.*). It is recorded as some doubt has been expressed whether this form does in fact occur in Abyssinia. Another female (length of fore wing 19 mm.) is in the B.M. collection from Harar, 10.i.1937 (*T. Wikeley*).

Colotis daira stygia Felder.

Anthopsyche stygia Felder, 1865, *Reise Nov.* : 188. Bogos, N.E. Africa.

According to Talbot (1939, *Trans. R. ent. Soc. Lond.* **88** : 201) *stygia* is the form which occurs in Abyssinia.

A series of five females of the yellow form, and three of the white form were obtained from River Hawash, August and September: Bukuru Bridge, 5000 ft., 22.vi.1947; and Mt. Fantalli, 6500 ft., 18.ix.1946.

Colotis evenina casta Gerstaecker.

Callosune casta Gerstaecker, 1871, *Arch. Naturg.* **37** (1) : 357. Lake Jipe, Zanzibar.

The species has been recorded from Abyssinia by Hale Carpenter (1935, *Trans. R. ent. Soc. Lond.*, **83** : 348) without further information.

The form occurring in Kenya, Uganda and Somaliland has been given subspecific rank by Talbot (1939, *Trans. R. ent. Soc. Lond.* **88** : 196), and it is to this subspecies that the Abyssinian specimens belong.

A single male and three females were obtained at Fich, 8.v.47.

Colotis agoye zephyrus Marshall.

Teracolus zephyrus Marshall, 1897, *Proc. zool. Soc. Lond.* **1897** : 8. Somaliland.

C. zephyrus was first taken in Abyssinia by Pagenstecher in lat. 6° N., 41° E. Guichard captured three males at Fich, lat. 8° N., 42° E., so that this form would appear to be established in Eastern Abyssinia.

Calopieris eulimene Klug.

Pontia eulimene Klug, 1829, *Sym. Phys.* : pl. 7, ff. 5–8. Ambukohl.

Hitherto known to occur in Arabia and Sudan. The capture of two males with rather large fore wing cell spots at Lake Bario, 7.ii.1947, indicates that the species is spreading southwards.

" Flying in open country and visiting flowers of *Capparis decidua*."

Euchloë belemia abyssinica Riley.

Euchloë belemia abyssinica Riley, 1928, *Entomologist* **61** : 136. Mt. Chillalo.

The capture of half a dozen males of this very distinct subspecies is of interest, as hitherto only a single female, the holotype, was known from Abyssinia. These males show considerable variation in size, but otherwise do not differ in appearance from the female.

River Hawash, 15.ix.1946; Addis Ababa, 11.xi.1946; Lake Bishoftu, 1.vi.1946.

Papilio dardanus antinorii Oberthür.

Papilio antinorii Oberthür, 1883, *Ann. Mus. stor. nat. Genova* **18** : 711, pl. 9, f. 4 ♀. Feleklek.

Papilio dardanus antinorii Oberthür (Hale Carpenter), 1938, *Trans. R. ent. Soc. Lond.* **87** : 327

An interesting series of 41 males and 26 females was obtained showing considerable variation in both sexes.

The males vary in size slightly more than the females, the length of fore wing ranging from 40 mm. to 52 mm. (males) and 46 mm. to 53 mm. (females).

Males.—The fore wing outer marginal brownish black band varies at its greatest width at vein 7 from 8 mm. to 12 mm. and the distinctive " bay " in the brownish black apical area mentioned by Hale Carpenter (*op. cit.*) is present in every specimen and in three it extends to the apical spot.

On the hind wing the postdiscal band ranges from two separate spots at the tornus and a trace of a submarginal band of spots, to a more or less connected band of irregular shaped patches and a submarginal band of zig-zag markings.

The hind wing tails also vary in length and shape.

On the underside the colour of the hind wing varies from pale cream to deep fuscous and the hind wing postdiscal dark brown band of irregular markings is as variable as on the upperside.

" Very common on the lower and sheltered parts of Djemdjem Forest."

Papilio dardanus antinorii ♀ f. *antinorii* Oberthür.

Eighteen specimens were obtained. They exhibit the same differences in the size of markings and colour of hind wing underside as the males.

Papilio dardanus antinorii ♀ f. *ruspinae* Kheil.

Papilio antinorii ab. ♀ *ruspinae* Kheil, 1890, *Iris* **3** : 336, text-fig. 2. Korata, Lake Tana.

One specimen from Djemdjem Forest 8000 ft., 1.xii.1946. It agrees well with the text-figure of the type (*op. cit.*).

Papilio dardanus antinorii ♀ f. *niavioides* Kheil.

Papilio antinorii ab. ♀ *niavioides* Kheil, 1890, *Iris* **3** : 335, text-fig. 1. Korata, Lake Tana.

Four specimens of this fine mimic of *Amauris niavius* L. from Djemdjem Forest, 8000 ft., 1.xii.1946, and Jimma, 5000 ft., 8.i.1946. They show considerable variation in the size of the white subapical marking of the fore wing. One specimen has some pale brick-red scales in interspaces 1 and 2 on the upperside of the fore wing.

Papilio dardanus antinorii ♀ f. **alameitu** forma n. (P. I, fig. 1.)

Upperside.—Fore wing : Orange yellow, becoming somewhat paler towards apex of wing, brownish black markings similar to those of a rather well marked ♀ form *antinorii* except that the dark hook-shaped marking in cell reaches the median vein.

Hind wing : Basal and discal area of wing fuscous as in ♀ f. *ruspinae* ; outer third of wing including tail yellow ; a series of postdiscal and submarginal brownish black markings as in ♀ form *antinorii* ; a patch of brownish black scales on the outer half of tail.

Underside.—The upperside markings reproduced less distinctly than on upperside ; fore wing area between the lower median and inner margin fuscous ; postdiscal and subapical areas pale creamy yellow.

Hind wing : Basal and discal areas fuscous ; postdiscal area pale creamy yellow.

♀. *Holotype* B.M. No. Rh. 15107, Wallega Valley, Ghedo, 7000 ft., 17.v.46.

Euchrysops eleusis Demaison.

Lycaena eleusis Demaison, 1888, *Ann. Soc. ent. Fr.* (6) **8** : lxvi. Nubia.

Nine males and four females were obtained and as no better locality than "Abyssinia " has been recorded the following places of capture are given ;

Lake Bishoftu, 7000 ft., 31.x.1945; Addis Ababa, 8000 ft., 30.ix.1945; near Karakori, 6.viii.1946; Bukuru Bridge, 22.vi.1947.

Lepidochrysops guichardi sp. n. (Pl. I, figs. 8–10.)

Head, thorax and abdomen dark brown; antennae black with a white ring on each segment; club blackish brown.

Male.—Upperside.—Both wings dark brown; basal and discal areas bright shining blue; hind wing with a somewhat indistinct submarginal row of greyish blue markings.

Underside.—Fore wing: Brownish grey; a marginal row of dark brown spots, each with a white dash; a row of white lunules and a postdiscal row of five dark brown spots, ringed with white; a dark brown marking edged with white at the discocellulars. Hind wing: Brownish grey, somewhat darker than fore wing; a marginal row of dark brown spots ringed with white, the spots in interspace 2 blue centred; a row of sub-marginal white lunules and a postdiscal row of six dark brown spots, each ringed with white; three white ringed black spots; spots near base of wing, one in the cell, the others in interspaces 1 and 7.

The *female* differs in having the upperside bright blue areas more restricted; the postdiscal areas of both wings bright golden brown, becoming darker towards the outer margin.

The underside does not differ from the male.

Length of fore wing: ♂ 16 mm.; ♀ 18 mm.

♂. *Holotype* B.M. No. Rh. 15104, 10 miles West of Addis Ababa, 8000 ft., 5.iv.1947.

♀. *Allotype* B.M. No. Rh. 15105, 10 miles West of Addis Ababa, 8000 ft., 5.iv.1947.

A series of 7 males and 3 females was obtained. The males vary considerably in the extension of the bright blue area on upperside.

"Found not uncommonly in open stony country, not below 8000 ft."

Perhaps nearest to *L. trimeni* Bethune-Baker, but very distinct from anything known to me.

Syntarucus Butler.

Syntarucus telicanus plinius Fabricius (Ungemach), 1932, *Mem. Soc. Sci. nat. Maroc.* **32** : 90.
Stempffer, 1935, *Bull. nat. Hist. Paris* **2** : 221.
Gabriel, 1939, *Ruwenzori Exped.* 1934–5, **3** (2) : 82.

Seven males and three females of what older authors would have identified as *telicanus* Lang or *plinius* Fabricius were collected, and in view of the interesting results obtained from the examination of a large series of the same insect from Ruwenzori (*op. cit.*), the males were dissected, with the result that only one male was found to be *telicanus*, the others being *jeanneli* Stempffer.

As these specimens were taken in widely separated localities, the statement of Monsieur Ungemach (*op. cit.*) that *telicanus* is one of the commonest butterflies in Abyssinia, may be doubted.

Syntarucus jeanneli Stempffer.

Syntarucus jeanneli Stempffer, 1935, *Bull. nat. Hist. Paris* **2** : 233.

Asba Tafari, 5800 ft., 2.ix.1945, 1 ♂, 1 ♀; Lekempti, 6500 ft., 26.v.1946, 1 ♂, 1 ♀; near Ghimbi, 7000 ft., May, 1946, 3 ♂; S. of Dire Dawa, 7000 ft., 20.iv.1946, 1 ♂; Fiche, 20.x.1945, 1 ♂; R. Hawash, 6000 ft., 1 ♀.

Syntarucus telicanus Lang.

Syntarucus telicanus Lang (Stempffer), 1935, *loc. cit.* **2** : 232.

Asba Tafari, 5800 ft., 2.ix.1945, 1 ♂; Djemdjem Forest, 8000 ft., 25.v. 1947, 1 ♀.

Castalius melaena Trimen.

Lycaena melaena Trimen, 1887, *S. African Butt.* **2** : 82. S. Africa.

Two males were taken near Karakori, 6000 ft., 6.viii.1946.

Anthene janna sp. n. (Pl. I, figs. 5–7.)

Head, thorax and abdomen black above, brownish grey beneath. Antennae black with a white ring on each segment; antennal club black with a fuscous tip; fringes greyish blue. Length of fore wing: ♂ 12 mm.; ♀ 16 mm.

Male.—Upperside.—Both wings bright silvery blue with the veins outlined in blackish brown, base of wings black, interspersed with blue scales. Fore wing with a blackish brown line along the outer margin, broadening somewhat at apex of wing; costal margin narrowly outlined with blackish brown for two-thirds of its length from the apex. Hind wing outlined with blackish brown from vein 8 to the tornus; a rectangular black spot in interspace 1c at the tornus and a circular black marginal spot in interspace 2.

Underside.—Fore wing: Light brown; a row of dark brown markings edged with greyish white, forming a submarginal band and a postdiscal irregular band of dark brown markings also edged with greyish white; a brown spot on the discocellulars and a basal black streak in interspace 1.

Hind wing: Light brown; three greyish ringed black spots near base of wing in interspaces 1b, 1c and 7 and a fourth black spot in discoidal cell; a series of irregular greyish white lines on the discal and submarginal areas of the wing; three black spots ringed with bluish green scales in interspaces 1b, 2 and 3 near the margin, and a row of four blackish brown marginal lunules edged with greyish white in interspaces 4 to 7.

Female.—Upperside.—Basal areas of both wings silvery blue; Fore wing: apical half of wing blackish brown. Hind wing: A large blackish brown circular marking at apical area; a submarginal row of greyish white markings; three black spots in tornal area as in the male. On the *underside* the female only differs from the male in being somewhat paler.

♂. Holotype No. Rh. 15115 Coll. B.M. (N.H.),Fich-Babile Road, 12.v.1947.

♀. *Allotype* No. Rh. 15116 Coll. B.M. (N.H.), Fich-Babile Road, 12.v.1947.

Five males and two females of this very distinct species were captured on the same day.

Chloroselas pseudozeritis tytleri Riley.

Chloroselas pseudozeritis tytleri Riley, 1932, *Ann. Mag. nat. Hist.* (10) **10** : 147, pl. 9, f. 7. Tongido, E. Africa.

Two males and seven females of this fine Lycaenid with the underside of both wings silver spotted, were captured on the Fich-Babile Road on 12.v. 1947.

They agree well with the types except that the females vary considerably in size, the smallest having a fore wing length of 10 mm. and the largest 13 mm.

" Found fairly commonly on flowers of white acacia."

Chloroselas esmeralda Butler.

Chloroselas esmeralda Butler, 1885, *Proc. zool. Soc. Lond.* **1885** : 765, pl. 47, f. 4, ♂. Bunder Maria, Somaliland.

A single female captured on the Fich-Babile Road, 7.v.1947, agrees well

with the type on the underside. On the upperside both wings are blackish brown with an almost black patch in the cell area of fore wing.

Epamera sudanicus Aurivillius.

Iolaus umbrosa var. *sudanicus* Aurivillius, 1905, *Ark. Zool.* **2** (12) : 15. Lake Tchad.

A single, rather worn female from Fich, 8.v.1947, differs from *umbrosa* Butler as follows :

Colour of underside almost uniformly grey ; transverse lines on underside of fore wing parallel whereas the inner line is strongly bowed outwardly in *umbrosa*.

I have not seen a specimen of *sudanicus*, the determination being based on Aurivillius's rather brief description (*op. cit.*).

Pseudiolaus glaucus Butler.

Iolaus glaucus Butler, 1885, *Proc. zool. Soc. Lond.* **1885** : 667. Duderi, Somaliland.

One very worn female of this uncommon species, from the Ghibdo River Valley.

Butler (*op. cit.*) does not mention that the type is a male, but his description says : " a velvety black patch of thickened scales at base of subcostal branches." This is the male sex patch.

The female differs principally in having more rounded wings and, on the hind wing upperside, two internervular submarginal greyish white markings. The underside markings are the same as the male. Both sexes have two hind wing tails—one about 8 mm. in length at vein 2 and a second, about 4 mm. long at vein 4.

"A few were seen on flowers of *Acacia*. Very difficult to capture."

Alaena johanna E. M. Sharpe.

Alaena johanna E. M. Sharpe, 1890, *Ann. Mag. nat. Hist.* (6) **5** : 442. E. Africa.

Three males were captured on Mt. Fantalli, 6500 ft., 18.ix.1946, and one female at Lake Auasa, 19.iv.1948.

" Found at the end of the rainy season flying in open country amongst grass and rocks."

Sarangesa seineri Strand.

Sarangesa seineri Strand, 1909, *Arch. Naturg.* **75** (1) : 383. Zambesi.

1 ♂ Bukuru Bridge, 5000 ft., 22.vi.1947.

Leucochitonea hindei Druce.

Leucochitonea hindei Druce, 1903, *Ann. Mag. nat. Hist.* (7) **12** : 636. Kenya.

8 ♂, Fich, 8.v.1947. 3 ♂, Fich-Babile Road, 12.v.1947.

Abantis paradisea Butler.

Leucochitonea paradisea Butler, 1870, *Trans. ent. Soc. Lond.* **1870** : 499. Port Natal.

2 ♂, 2 ♀, Bukuru Bridge, 5000 ft., Sept., 1946 ; June, 1947.

Spialia zebra bifida Higgins.

Hesperia bifida Higgins, 1925, *Trans. ent. Soc. Lond.* **1925** : 111. Nairobi.

1 ♂, 1 ♀, Bukuru Bridge, 8000 ft., June, 1947.

Spialia mangana Rebel.

Hesperia mangana Rebel, 1899, *Anz. Akad. Wiss. Wien.* **36** : 360. Ras Fartak, S. Arabia.

1 ♂, Miesso, 4.ix.1945 ; 1 ♂, 1 ♀, Fich, 8.v.1947.

Spialia confusa obscura Higgins.

Hesperia transvaaliae var. *obscura* Higgins, 1924, *Trans. ent. Soc. Lond.* **1924** : 90. Nyasaland.

2 ♂, 2 ♀, Fich, 8.v.1947.

Spialia doris doris Walker.

Nisoniades doris Walker, 1870, *Entomologist* **5** : 56. Tajora, Red Sea.

2 ♂, Ghedo River Valley, 16.ii.1947 ; 1 ♀, Miesso, 4.ix.1945.

Pelopidas perobscura Druce.

Parnara perobscura Druce, 1912, *Ann. Mag. nat. Hist.* (8) **9** : 504. Addah, W. Africa.

1 ♂, Jimma, 22.i.1946.

The following new names are proposed in this paper :

Acraea pseudolycia astrigera ♀ f. **auasa** forma n.
Acraea **guichardi** sp. n.
Acraea safie ♀ f. **tillini** forma n.
Euphaedra cooksoni **attenuata** subsp. n.
Papilio dardanus antinorii ♀ f. **alameitu** forma n.
Lepidochrysops **guichardi** sp. n.
Anthene **janna** sp. n.

Localities mentioned in this paper :

Assab, S. of Eritrea.
Auasa Lake, 150 miles S. of Addis Ababa.
Babile, near Harir.
Bario Lake, near W. border of French Somaliland.
Bishopftu Lake, 20 miles S. of Addis Ababa.
Bukuru Bridge, 40 miles S. of Addis Ababa.
Danakil, E. Abyssinia.
Didessa River, W. of Lekempti.
Djemdjem Forest, 45 miles W. of Addis Ababa.
Errer, 30 miles W. of Diredawa.
Fantalli Mt., 70 miles E. of Addis Ababa.
Fich, 80 miles S. of Harar.
Fiché, 50 miles N. of Addis Ababa.
Gelalu River, S. of Gewani.
Gewani, 180 miles N.E. of Addis Ababa.
Ghibdo River Valley, 30 miles E. of Assab.
Jimma, 70 miles S.W. of Addis Ababa.
Jowaha, 120 miles N.E. of Addis Ababa.
Karakori, 100 miles N.E. of Addis Ababa.
Lekempti, 160 miles W. of Addis Ababa.
Miesso, 180 miles W. of Addis Ababa.
Mai Ceu, 250 miles N. of Addis Ababa.

FIGS. 1–10.—(1) *Papilio dardanus antinorii* ♀ f. *alameitu* f. n. (2) *Acraea pseudolycia astrigera* ♀ f. *auasa* f. n. (3) *Acraea guichardi* sp. n. ♂. (4) *A. safie* ♀ f. *tillini* f. n. (5) *Anthene janna* sp. n. ♂. (6) *A. janna* sp. n. ♀. (7) *A. janna* sp. n. ♂ (underside). (8) *Lepidochrysops guichardi* sp. n. ♂. (9) *L. guichardi* sp. n. ♀. (10) *L. guichardi* sp. n. ♀ (underside).

A. G. Gabriel.

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NOTE ON THE GENUS *SCHIZONOTINUS* RAMME (ORTHOPTERA, TETTIGONIIDAE).

By Dr. W. Ramme.

(*Zoologisches Museum, Berlin.*)

The genus *Schizonotinus* was founded by me (Ramme, 1948, *Proc. R. ent. Soc. Lond.* (B) **17** : 133) on a new species, *S. caucasicus* Ramme, from N.W. Caucasus. As I have been cut off from the literature since 1939, it is only recently that I noticed in the *Zoological Record* a species of *Pholidoptera* described by Tarbinsky (1940, *Orth. Ins. Azerbaidzhan* : 16) from the same region ; its name, *crassicerca*, and the general resemblance of females of *Pholidoptera* to those of *Schizonotinus* made me suspect a synonymy. At my request, my

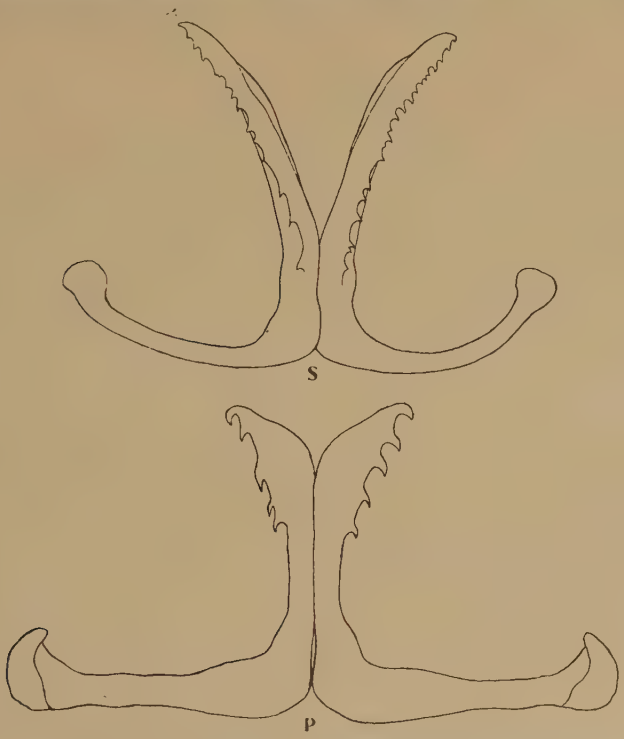

Fig. 1.—Epiphalli of males. S, *Schizonotinus crassicercus* (Tarb.) ; P, *Psorodonotus venosus* (F-W.).

friend, Dr. B. P. Uvarov, compared paratypes of my insect with the original description of *Pholidoptera crassicerca* and confirmed my suspicion. The species *crassicerca* must be, therefore, transferred from *Pholidoptera* to *Schizonotinus* and the following new specific synonymy recorded :

Pholidoptera crassicerca Tarbinsky, 1940 = (*Schizonotinus caucasicus* Ramme, 1948) = *Schizonotinus crassicercus* (Ramme, 1948).

In any case, *Schizonotinus* remains a valid genus. In the original description, I suggested that it is in many respects nearer to *Psorodonotus* than to *Pholidoptera*; in particular there exists certain resemblance in the structure of abdominal tergites with *Psorodonotus venosus* (Fischer de Waldheim). A comparison of the epiphalli (fig. 1, P and S) confirms this view, since their structure is similar in principle in *Psorodonotus* and *Schizonotinus*, while quite distinct from that in *Pholidoptera*, whether this latter genus is taken in its old wide sense, or restricted, as is being done in my forthcoming revision, where it is divided into five genera, four of them new.

Book Notices.

Coleoptera or Beetles East of the Great Plains. By J. Gordon Edwards. 4to. Ann Arbor, Michigan (Edwards Bros., Inc.), 1949. (Litho-printed.) Pp. 181, 23 pls. Price $3.50.

This book is an attempt to consolidate in one volume of convenient size basic information on Coleoptera designed to help and encourage the amateur.

The introductory pages give an elementary account of the order Coleoptera, and of scientific nomenclature with particular reference to that order. The key to the families occurring east of the Great Plains, the structure and use of which is explained, covers pages 11–51, and is illustrated by 23 plates. This is followed by a discussion of each of the families concerned, arranged alphabetically.

A phylogenetic list of families of Coleoptera east of the Great Plains, a glossary and index complete the book.

Dissection of the Cockroach. By R. H. Whitehouse, D.Sc.(Birm.), and A. J. Grove, M.A.(Cantab.), D.Sc.(Birm.). 8vo. London (University Tutorial Press), 1949. Pp. viii + 73, text illustr. Price 3s. 9d.

This is a laboratory manual of pocket size. After brief introductory advice on instruments and their care, drawings and laboratory notes, the external and internal anatomy is detailed, with notes on how to handle the specimen and how to display the structure to be studied. Where clearing, mounting, staining, or other special technique is required the procedure is discussed at the relevant point in the text.

Illustrations are mostly in duplicate, a half-tone photograph being accompanied by a line-block showing the same structure, with explanatory labels.

At the end of each small section there are suggestions for drawing and making laboratory notes.

NOTES ON SOME ORIENTAL MOSQUITOES.

By P. F. Mattingly.

(*Department of Entomology, British Museum (Natural History)*).

Genus *Heizmannia* Ludlow.

The following descriptions of pupae were made at the request of Lt.-Cdr. K. L. Knight and Dr. R. W. Chamberlain who were unable to include *Heizmannia* in their new system of nomenclature for the chaetotaxy of the mosquito pupa (1948) owing to lack of material. I am indebted to Lt.-Cdr. Knight for reading and criticizing the manuscript.

H. pilosa Brug.

The descriptions which follow are based on the pelts of the type male and a paratype male referred to by Brug in his original description (1931). The type male is the specimen referred to by Brug as "*a*" and the paratype that referred to as "*b*." As Brug pointed out, there are marked differences between the two pelts although the adults, and, in particular the male genitalia, appear to be indistinguishable. In view, however, of the extreme paucity of the available material it is not proposed at the present time to discuss the taxonomic status of the two forms. Fig. 1 is based entirely on the pelt of the type male, except for the setal rings (O) on segments IV and V which were drawn from the paratype pelt. In general, the arrangement of setae is much as in *Aëdes*. The majority of setae, with the exception of the float-hair, seta 5 on segment VI (and almost certainly on IV and V as well) and seta *8* on VII and VIII, are very small and inconspicuous, but setae *10*, *11* and *12* of the metanotum, *3* and *4* of I, *3* and *4* of II and *4* of III, although short are stout, dark and relatively conspicuous. The narrow paddle with conspicuous fringe and darkly pigmented mid-rib, taken in conjunction with the small number of branches in seta *8* of segments VII and VIII, is probably diagnostic of the genus. The well developed seta *3* on the anterior segments of the abdomen is an unusual feature. Details of the pelt of the type male are as follows:

Trumpets narrow, cylindrical with the meatus occupying almost the entire length and the aperture short and almost circular. *Cephalothorax* with setae *1*, *2* and *3* single, *3* about one-third the length of the paddle, *2* rather less, *4* bifid, *5* single or bifid, *6* and *7* single, *8* single or trifid, *9* single, these six setae each about one-fifth to a quarter the length of the paddle. Metanotal setae relatively stout and dark, *10* 4-branched, *11* single, *12* bifid, *11* about a quarter the length of the paddle. *Abdomen* with seta *2* of segment I modified to form a strongly developed float-hair, *3* and *4* stout, dark and single, the former about one-fifth, the latter rather over one-third the length of the paddle, *5* and *6* minute, bifid to trifid and 4 to 5-branched respectively, *7*, *8* and *10* very delicate, *7* single, about a quarter the length of the paddle, *8* single, minute, *10* bifid, about one-fifth the length of the paddle. Segment II with *2* small and tuft-like with numerous branches, *3* and *4* stout, dark and single, *3* about one-sixth and *4* about one-fifth the length of the paddle, *5* and *6* minute, 5-branched and bifid respectively, *7* slender, delicate, about the same length as

3, *8* minute, single, curved, *10* small with about 5 very delicate branches. Segment III with *3* very short, but still relatively stout, *2* minute, delicate, 4-branched, *4* much as on segment II, *5* short, delicate, single, *6* minute, trifid, *7* and *8* much as on II, *9* and *10* minute,

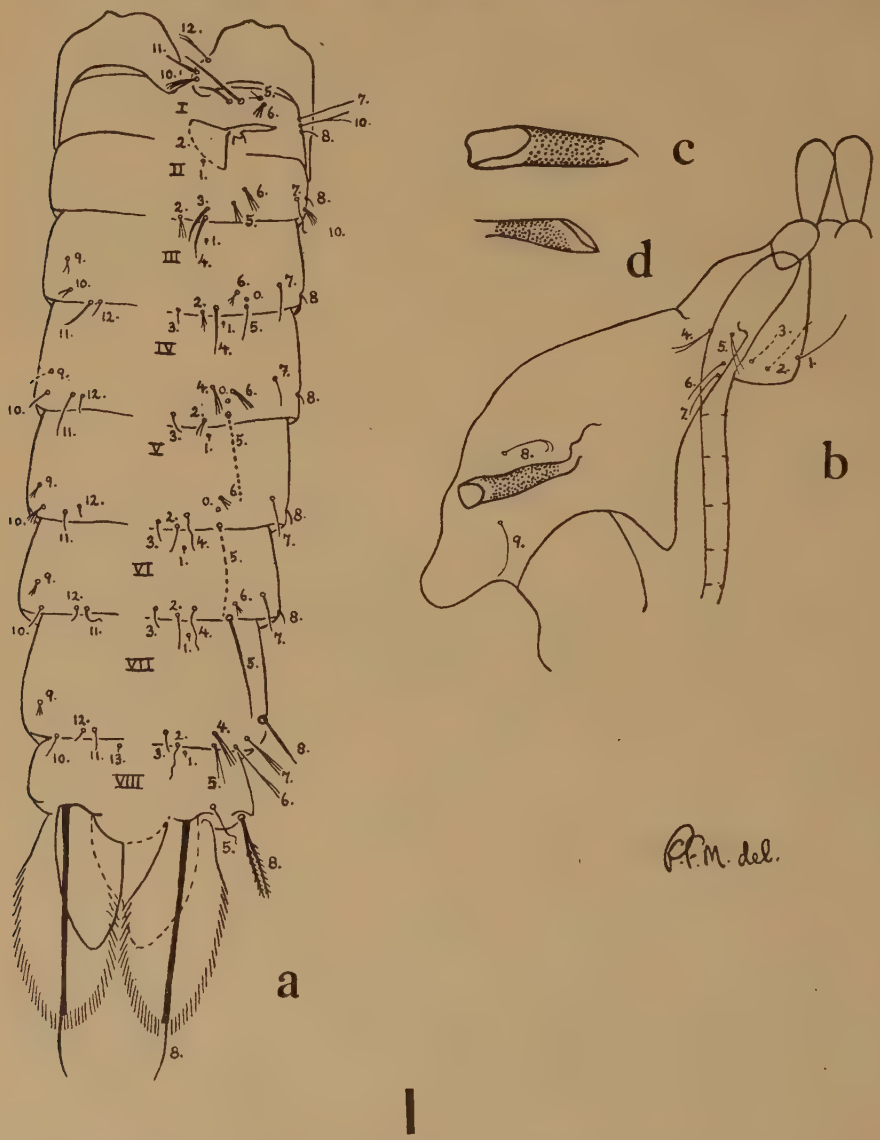

FIG. 1.—*Heizmannia* spp. Pupae. (*a*) *H. pilosa*. Metanotum and abdomen. (Dorsal surface on the right, ventral on the left.) (*b*) *H. pilosa*. Cephalothorax. (*c*) *H. himalayensis*. Respiratory trumpet. (*d*) *H. pilosa*. Respiratory trumpet.

trifid or *10* may be 4-branched, *11* single or bifid, relatively stout, about one-seventh the length of the paddle, *12* minute, single. IV with all those setae which are present very small, *2* delicate, bifid, *3* simple, much as on III, *4* with about 5 delicate branches, *5* missing

but apparently stout and conspicuous to judge from the size of the base, *6* minute, trifid, *7* very delicate, single, about one-eighth the length of the paddle, *8* much as on III, *9* not seen, *10* minute, bifid, *11* short, delicate, bifid, *12* minute, single. Segment V with *3* minute, single, *2* and *4* small, delicate, *2* single, *4* bifid, *5* missing, the base large and conspicuous, *6* minute with 5 delicate branches, *7* short and very delicate, single, *8* as on IV, *9* small and delicate, split distally, *10* minute with 5 branches, *11* very delicate with slight fraying, about one-sixth the length of the paddle, *12* minute, simple. VI with *2*, *3* and *4* all single, 3 minute, *2* and *4* small and very delicate, *5* stout, dark, just over half the length of the paddle, single (split distally on one side into 2–3 very fine, short branches), *6* minute with about 5 branches, *7* small and very delicate, *8* as on V, *9* minute with 4 branches, *10* short, very delicate, single or bifid, *11* and *12* much as on V, VII with *2* and *3* much as on VI, *4* trifid, *5* short, delicate, bifid or trifid, *6* very delicate, about one-fifth the length of the paddle, split distally into 2–3 delicate branches, *7* very delicate, trifid, *8* stout, dark, straight, spinelike, about a quarter the length of the paddle, *9* small, delicate, trifid, *10*, *11*, *12* delicate, single. Segment VIII with seta *5* delicate, single, about a quarter the length of the paddle, seta *8* stout, dark, plumose, bifid, a little less than two-fifths the length of the paddle. Paddles long and narrow, their length about 2·5 × their greatest breadth. A fringe of delicate hairs extends from about one-third the distance from base to seta *8* on the outer edge to half-way down the inner edge. Proximal to this on the outer edge are a few very inconspicuous, rudimentary spines. The mid-rib is darkly pigmented. Seta *8* is slender but conspicuous. It arises just before the tip of the paddle and is about one-third the paddle length.

Variation.—The pelt of the paratype male (Brug's specimen "*b*") differs from that of the type as follows:

Trumpets broader apically, conical. *Cephalothorax* with seta *4* 4-branched, *7* split distally, *8* bifid, *10* about a third the length of the paddle, *11* a little more than a quarter, *12* rather less. *Abdomen* with setae *3* and *4* of segment II about a fifth and a quarter the length of the paddle respectively, seta *5* 4-branched, *6* single. The relative position of these two setae differs somewhat from that encountered in the type, *6* being on a level with *5* and making a straight line with this and *7*. Seta *10* is single. Segment III with seta *2* bifid or trifid, *4* missing, *6* apparently single but may be split distally, *10* apparently single. Segment IV with *6* bifid, *9* short, delicate, single, *11* single. Segment VI with *5* just under two-thirds the length of the paddle, *6* bifid. VII with *2* bifid, *4* bifid, *5* single, *6* single, *7* single on one side, bifid on the other. Segment VIII with seta *8* trifid. Paddles about 2·1 × as long as their greatest breadth, the fringe somewhat better developed than in the type.

It will be seen that the differences in chaetotaxy are very slight. The difference in shape of the trumpets and the broader paddles are quite striking characters. The difference in the relative positions of setae 5 and 6 on segment II is of doubtful significance.

H. himalayensis Barraud.

A single pelt with associated larval pelt and female adult from Koti, Western Himalayas (*P. J. Barraud*) differs from that of the type male of *pilosa* as follows:

Trumpets larger, similar in shape, but with the aperture more elongated and the meatus correspondingly shorter. *Cephalothorax* with seta *1* trifid, *2* bifid, *3* single on one side, bifid on the other, *4* single, *6* single or bifid and one-third to three-eighths the length of the paddle, *7* a little more than two-fifths the length of the paddle, all these setae considerably stouter than in *pilosa* except for *3* which is relatively slender, *8* and *9* both single, a little over one-third the length of the paddle, *10*, *11* and *12* single, *11* considerably stouter

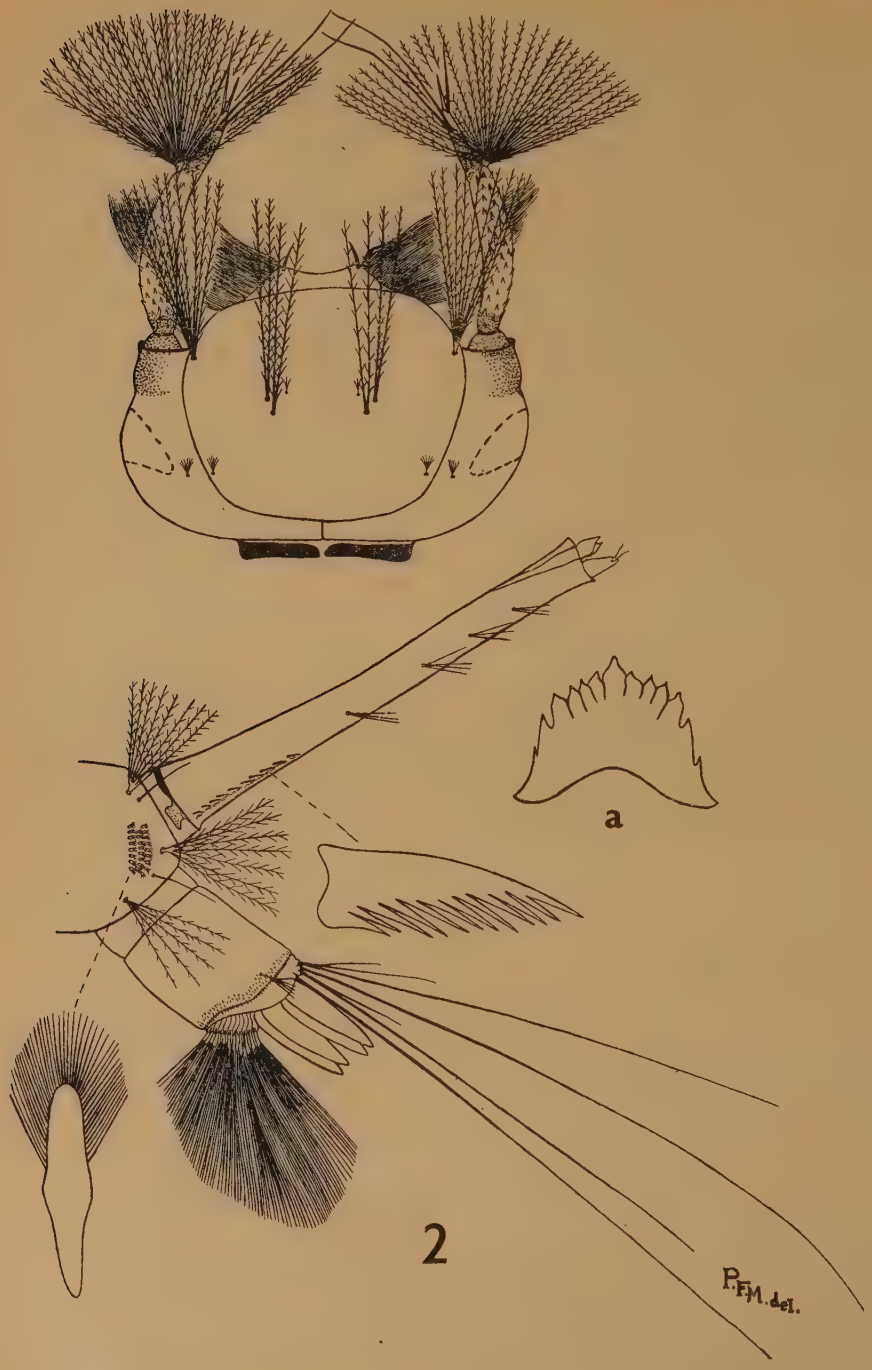

FIG. 2.—*Culex rubithoracis*. Head and terminal segments of fourth instar larva. (*a*) Mentum.

than the others and slightly longer, being about two-fifths the length of the paddle. *Abdomen* with seta *3* of segment I paler and rather more slender than seta *4*, the latter slightly less than half the length of the paddle, *7* and *10* stout and dark, between one-third

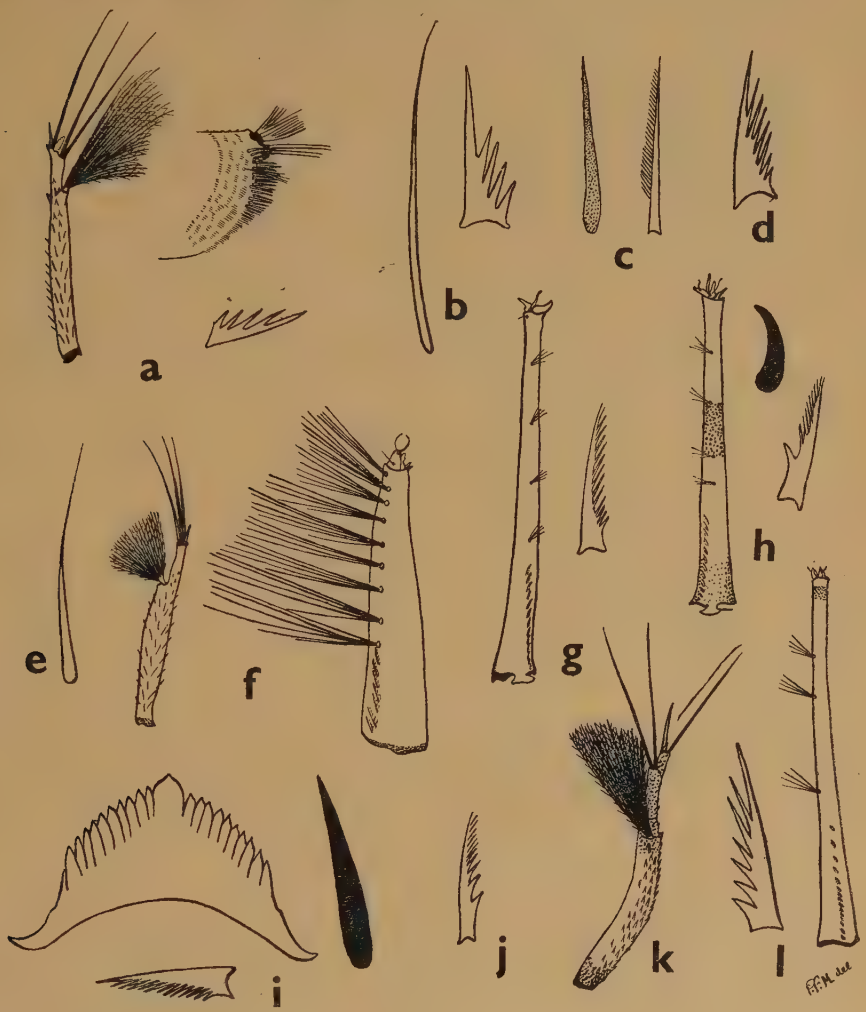

Fig. 3.—Details of larvae of subgenus *Lophoceraomyia*. (*a*) *C.* (*L.*) *uniformis*. Antenna, pecten spine and distal edge of saddle. (*b*) *C.* (*L.*) *? cinctellus*. Preclypeal spine and pecten spine. (*c*) *C.* (*L.*) *hewitti*. Preclypeal spine and pecten spine. (*d*) *C.* (*L.*) *carolinensis*. Pecten spine. (*e*) *C.* (*L.*) *eminentia*. Preclypeal spine. (*f*) *C.* (*L.*) *navalis*. Antenna and siphon. (*g*) *C.* (*L.*) *hilli* var. *buxtoni*. Siphon and pecten spine. (*h*) *C.* (*L.*) *quadripalpis*. Siphon, pecten spine and preclypeal spine. (*i*) *C.* (*L.*) *fraudatrix*. Mentum, preclypeal spine and pecten spine. (*j*) *C.* (*L.*) *fraudatrix* var. *solomonis*. Pecten spine. (*k*) *C.* (*L.*) *minutissimus*. Antenna. (*l*) *C.* (*L.*) *minor*. Siphon and pecten spine.

and two-fifths the length of the paddle. Segment II with seta *2* only lightly dendritic, *3* comparatively stout, but paler than *4* which is about one-third the length of the paddle, *6* single, about one-fifth the length of the paddle and lying only very slightly anterior to *5*, *10* single, slightly less than one-third the length of the paddle, *9* single, the same distance from the posterior edge of the segment as *10* which is closer to the mid-line, *10* with 5 branches, *11* rather less than one-third the length of the paddle. Segment IV with *2* single and set considerably posterior to *3*, *4* single, about a quarter the length of the paddle, *5* single, stout, dark and conspicuous, a little less than three-quarters the length of the paddle, *6* bifid, lying nearer the mid-line than *5*, between this and *4*, *7* rather more than a quarter the length of the paddle, *9* trifid, *10* 4-branched, *11* about a quarter the length of the paddle. Segment V with *2* bifid, *4* single, *5* much as on IV, *6* trifid, *7* rather over a quarter the length of the paddle, *9* 4-branched, *10* trifid, *11* about one-third the length of the paddle. Segment VI with *5* single, a little less than three-fifths the length of the paddle, *6* single, *10* single, about a fifth the length of the paddle, *11* rather less than a third of the length of the paddle. VII with all dorsal setae single except *8*, which is bifid on one side, this seta a little less than one-third the length of the paddle, *10* bifid. Segment VIII with *5* rather more than a third the length of the paddle, *8* trifid on one side, 4-branched on the other, between two-fifths and a half the length of the paddle. Paddles broadly oval, about $1\frac{1}{2}\times$ as long as their greatest breadth. Seta *8* just over a quarter the length of the paddle.

Genus *Culex* L.

Subgenus *Lophoceraomyia* Theobald.

C. (*L.*) *parainfantulus* Menon.

A comparison between the terminalia of the type male of *C.* (*L.*) *infantulus* Edwards and the description and figures of those of *parainfantulus* Menon failed to reveal any significant difference and the latter name is therefore regarded as a synonym of the former. In particular the terms "reticulate" (Menon, 1944), "tubercular" (Edwards, 1922), and "placoid" (Bohart and Ingram, 1946), as applied to the dorsal process of the phallosome, are clearly descriptive, in the present instance, of the same condition. The recorded range of *infantulus* should be extended to include Southern and Eastern India in addition to Java, Siam, Indochina, the Philippines, the Ryuku Islands, China and Japan.

C. (*L.*) *rubithoracis* Leicester.

A description of the larva of this species was recently prepared in conjunction with Dr. R. B. Jackson, who found it in swampy ground at Hong Kong. As this description was being sent to press we heard from Mr. Baisas, of the Bureau of Health, Manila, that he already had a description in the press. Ours was accordingly withdrawn. As, however, the Hong Kong material differs in some respects from that described by Mr. Baisas (*in* Dantis, 1947), and as the latter has omitted from his description some characters which appear to be necessary for keying the larvae of this subgenus, a comparative description is given below. Details of the larva, which has not previously been figured, are shown in fig. 2. The description of the Hong Kong material is based on nine fourth stage pelts, eight of them with associated adults. Characters differing from or additional to those described by Baisas are as follows:

Head broader than long with the integument pale except for small patches of infuscation forming an irregular pattern. *Antennae* stout, curved, spinose, swollen below the point

of attachment of the antennal tuft (fig. 1 shows the appearance in crushed pelts), pale except for well-marked areas of infuscation at the base and beyond the tuft. Apex pale for some distance back. Antennal tuft situated at about two-thirds the distance from the base to the apex. Subterminal bristles situated well behind the apex, much longer and stouter than the terminal bristle. *Pre-clypeal spines* short, dark, stout and sharply pointed. *Mouth-brushes* well developed, the hairs unmodified. Head seta "A" with 8–11 plumose branches, 0·9–1·3 × as long as the antennal tuft. " C " and " *d* " bifid or trifid, " *d* " situated inside and in front of " B." " *e* " with 5–8 branches. Mentum with 6–7 teeth on either side of the large central tooth, the basal ones small and well separated (absent from one specimen which has only 11 teeth in all). *Comb* with about 30 scales. Inner (upper) caudal seta with one long and 1–3 short branches. *Ventral brush* with 12 tufts all in the barred area. *Anal papillae* varying from slightly longer than the saddle to a little over half its length. *Siphon* tapering from the base to about halfway, beyond which the sides are roughly parallel. Pecten with 9–10 teeth, those from the middle having a minimum of 12 secondary denticles. Siphonal index, in crushed pelts, about 5.

The larva is readily distinguished from all others of the subgenus except *uniformis* by the heavily spiculated thorax. From *uniformis* it can be separated by the reduced spiculation of the abdomen, thicker antenna, position of antennal tuft, lightly spiculated distal edge of saddle and greater number of secondary denticles on typical pecten teeth.

When comparing this larva with others of the sub-genus it was found that some diagnostic characters usually given were quite unreliable, while others, more reliable, were omitted. The accompanying key has been drawn up with a view to embodying the characters which appear most useful in a compact form and drawing attention to those which should be mentioned in future descriptions if these descriptions are to be adequate for separating the species to which they pertain. The key is based on the entire collection of larvae of *Lophoceraomyia* in the British Museum and on all the descriptions so far published. At least one larva or pelt of each species which is included has been seen by the author with the exception of *C.* (*L.*) *tuberis* R. Bohart, which appears closely to resemble *C.* (*L.*) *minor* Leicester, and may well prove to be inseparable from it when more material is available. The attribution of the larva of *C.* (*L.*) *curtipalpis* Edwards is the subject of so much uncertainty (Barraud, 1934) that it has been omitted, and those of *C.* (*L.*) *bernardi* Borel, *C.* (*L.*) *roubaudi* Borel (Borel, 1930) and *C.* (*L.*) *cylindricus* Theobald (Lee, 1944) have been omitted because the published descriptions are inadequate and no material is available to the author. As explained above, *C.* (*L.*) *parainfantulus* Menon is regarded as a synonym of *C.* (*L.*) *infantulus* Edwards. The larvae of *C.* (*L.*) *chaetoventralis* Theobald, *C.* (*L.*) *digoelensis* Brug, *C.* (*L.*) *flavicornis* Barraud, *C.* (*L.*) *fulleri* Ludlow, *C.* (*L.*) *hilli* Edwards (t.f.), *C.* (*L.*) *lavatae* Stone, *C.* (*L.*) *nolledoi* Baisas, *C.* (*L.*) *mindanaoensis* Baisas, *C.* (*L.*) *pachecoi* Baisas, *C.* (*L.*) *niger* Leicester, *C.* (*L.*) *plantaginis* Barraud, *C.* (*L.*) *seniori* Barraud, *C.* (*L.*) *minor* var. *bandoengensis* Brug, and *C.* (*L.*) *minor* var. *bengalensis* Barraud are unknown or undescribed.

Key to the known fourth instar larvae of *Culex* subgenus *Lophoceraomyia*.

1. Integument of thorax with numerous fine spicules (visible under a magnification of 80 ×) . . . . . 2.
   Integument smooth . . . . . 3.

2. Thorax and abdomen both heavily spiculated; antenna slender, tuft at about three-quarters the distance from the base to the apex; distal edge of saddle strongly spinose; pecten teeth with a small number of coarse lateral denticles (fig. 3*a*). . . . *uniformis* Theobald.
   Only the thorax strongly spiculated, integument of abdomen smooth except for some very fine spicules on the 8th segment; antenna somewhat swollen, tuft at about two-thirds the distance from the base to the apex; distal edge of saddle lightly spiculated; pecten teeth with secondary denticles very fine and numerous (fig. 2) *rubithoracis* Leicester.
3. Head seta " C " with 5–8 branches . . . . . 4.
   This seta with at most 3 branches, usually single or double . . . 6.
4. Preclypeal spines long, pale and slender; typical pecten spines each with 4 relatively coarse secondary denticles; distal edge of saddle with conspicuous spines (fig. 3*b*) . . . . . ? *cinctellus* Edwards.[1]
   Preclypeal spines stouter and darker; pecten teeth otherwise (somewhat similar in *carolinensis* but with secondary denticles more numerous); distal edge of saddle with small, inconspicuous spicules (figs. 3 *c*, *d*) . . . . . 5.
5. Head seta " B " with 3–5 branches; inner (upper, dorsal) submedian caudal bristles with 3–5 branches; siphonal index about 5; siphon with 4 pairs of subventral hair tufts *carolinensis* R. Bohart and Ingram.
   Head seta " B " single or double; I.s.c. single; siphon with 7 pairs of subventral hair tufts . . . . . *hewitti* Edwards.
6. Preclypeal spines relatively slender, often pale; pecten with 1–3 teeth (fig 3 *e*) . . . . . *eminentia* Leicester.
   Preclypeal spines stouter and darker; pecten teeth more numerous (except sometimes in *jenseni*) (figs. 3 *h*, *i*) . . . . . 7.
7. All antennal bristles, other than the antennal tuft, apical; proximal subventral tufts of siphon at least three-fifths the length of the siphon (fig. 3 *f*) . . . . . 8.
   Subterminal bristles of antenna situated well behind tip; subventral tufts of siphon not more than one-fifth the length of the siphon, usually much less (figs. 3 *g*, *h*, *k*, *l*) . . . . . 10.
8. Body, in life, with a strong bluish tinge; appendages strongly sclerotized, antennae and siphon dark . . . . *coerulescens* Edwards.
   Body without such coloration; head and siphon paler, less heavily sclerotized . . . . . 9.
9. Siphon with at most 7 pairs of subventral tufts; head setae " B " and " C " each with 2–3 branches; comb of about 20 scales arranged in a double row . . . . . *jenseni* De Meijere.
   Siphon normally with at least 8 pairs of subventral tufts; head setae " B " and " C " single; comb scales more numerous arranged in a patch (fig. 3 *f*) . . . . . *navalis* Edwards.
10. Pecten with 17 teeth; siphon distinctly upcurved . *tuberis* R. Bohart.
    Pecten with at most 16 teeth; frequently less; siphon normally straight[2] . . . . . 11.
11. Pecten teeth with the secondary denticles fine and numerous (figs. 3 *g*, *i*) . . . . . 12.
    Pecten teeth each with at most 6 (very occasionally 7) stout secondary denticles (fig. 3 *l*) . . . . . 15.

[1] See Edwards and Given (1928).
[2] But see Borel (1930 : 359).

12. Mentum with 15–17 teeth; siphonal index either less than 7 or more than 8 (figs. 2 *g*, *h*) . . . . . 13.
Mentum with 19–25 teeth[3]; siphonal index about 7·5–8·0 (fig. 3 *h*) . 14.
13. Siphon unicolorous; comb of about 50 scales; siphonal index about 9 (fig. 3 *g*) . . . . . *hilli* var. *buxtoni* Edwards.
Siphon with a dark ring in the middle; comb of less than 40 scales; siphonal index not more than 7 (fig. 3 *h*) . . . *quadripalpis* Edwards.
14. Head seta "*d*" bifid or trifid; mentum with 21–25 teeth; pecten teeth with all the secondary denticles very fine (fig. 3 *i*) *fraudatrix* Theobald.
Head seta "*d*" single; mentum with 19 teeth; pecten teeth with basal denticles more strongly developed (fig. 3 *j*) *fraudatrix* var. *solomonis* Edwards.
15. Antenna unicolorous or with the apex only dark, no basal infuscation apart from the usual narrow sclerotized ring; siphon either unicolorous or with a dark ring at the apex (fig. 3 *l*). . . . . 16.
Antenna infuscated at the base as well as beyond the antennal tuft; siphon sometimes unicolorous, generally with a dark ring in the middle (fig. 3 *k*) . . . . *infantulus* Edwards, *minutissimus* Theobald
16. Anal papillae generally more than twice the length of the saddle; siphonal index 9–10; siphon occasionally with a dark apical ring (fig. 3 *l*) . . . . . *minor* Leicester.
Anal papillae not much longer than the saddle; siphonal index about 10·5; antenna and siphon pale. . . . . *mammilifer* Leicester.

References.

Barraud, P. J., 1934, *Fauna of British India.* Culicidae. *Tribes Megarhinini and Culicini.* London.

Bohart, R. M., and Ingram, R. L., 1946, Mosquitoes of Okinawa and islands in the Central Pacific. *Bur. Med. Surg., Navy Dept., Washington, Navmed,* **1055**.

Borel, E., 1930, Les moustiques de la Cochinchine et du Sud-Annam. *Colln. Soc. Path. exot. Monogr.* **3**. Paris.

Brug, S. L., 1931, New Culicidae from Sumatra. *Tijds. Ent.* **74** : 245–250.

—— and Bonne-Wepster, J., 1947, The geographical distribution of the mosquitoes of the Malay Archipelago. *Chronica Naturae* **103** : 179–197.

Buxton, P. A., and Hopkins, G. H. E., 1927, Researches in Polynesia and Melanesia. *Mem. Lond. Sch. Hyg. Trop. Med.* **1**. London.

Dantis, F. V., 1947, The Mosquitoes of Manila. *Mon. Bull. Bur. Hlth., Manila* **23** : 251–257.

Edwards, F. W., 1922, A synopsis of adult Oriental Culicine (including Megarhine and Sabethine) mosquitoes, Pt. I. *Ind. J. Med. Res.* **10** : 249–293.

——, 1928, Mosquito Notes. VII. *Bull. ent. Res.* **18** : 267–284.

—— and Given, D. H. C., 1928, The Early stages of some Singapore mosquitoes. *Bull. ent. Res.* **18** : 337–357.

[3] Two larvae of Given's from Singapore, labelled "Lopho: fraudator" have only 15 teeth in the mentum. Edwards and Given ignored them in their description of the larva of *fraudatrix* and, as there are no associated adults, their identity remains in doubt. It is improbable that the forms included in couplets 13 and 14 will prove to be separable over their entire range.

Knight, K. L., and Chamberlain, R. W., 1948, A new nomenclature for the chaetotaxy of the mosquito pupa based on a comparative study of the genera (Diptera : Culicidae). *Proc. Helminth. Soc. Wash.* **15** : 1–10.

Lee, D. J., 1944, *An atlas of the mosquito larvae of the Australasian Region.* H.Q., Australian Military Forces.

Li, Feng Swen and Wu, Shih Cheng, 1935, Notes on the morphology of Culicine larvae in Hangchow. *Yearbook Bur. Entom. Hangchow* **1934** : 95–120.

Meijere, J. C. H. de, 1910, Nepenthes-tiere I. Systematik. *Ann. Jard. Bot. Buitenzorg.* 2*e* Ser. Suppl. **3**.

Menon, M. A. U., 1944, On a new species of the subgenus *Lophoceratomyia* Theobald, 1905 (Diptera Culicidae). *J. Malar. Inst. Ind.* **5** : 389–393.

Neave, S. A., 1939, *Nomenclator Zoologicus* **2** : 1–10025 (D-L).

Paine, R. W., and Edwards, F. W., 1929, Mosquitoes from the Solomon Islands. *Bull. ent. Res.* **20** : 303–316.

Senior-White, R., 1927, Notes on Ceylon mosquitoes. II. *Spolia Zeylanica* **14** : 61–76.

Book Notices.

The Bee Craftsman : A Short Guide to the Life Story and Management of the Honey-bee. By H. J. Wadey. 8vo. Petts Wood (Bee Craft Ltd.), 1949. Pp. 117, 6 half-tone plates. Price 4s. 6d.

This book is in four sections : Part I describes the inhabitants of a hive and details the story of a colony throughout the year. Part II deals with the basic principles of siting the apiary and handling the bees, controlling swarms and feeding. Part III covers management of the colony, extracting and processing honey, moving and uniting stocks, and queen-rearing. Part IV deals with special topics : other creatures in the hive ; wintering bees ; sickness in the hive ; diseases of the brood.

The book concludes with a bibliography and an index.

Coleoptera of Tristan da Cunha. Results of the Norwegian Scientific Expedition to Tristan da Cunha, 1937–1938, No. 17. By Per Brink. 8vo. Oslo (Det Norske Videnskaps-Akademi), 1948. Pp. 121. 1 pl., 1 map, text illustr. Price Kr. 10.00.

After summarizing the very scanty earlier records from Tristan da Cunha, the author gives a systematic account of the present collection, which includes eight families of Coleoptera : Dytiscidae, Hydrophilidae, Ptiliidae, Staphylinidae, Cucujidae, Lathridiidae, Oedemeridae, Curculionidae.

Other topics discussed comprise : Reduction of wings and eyes, distribution of species on the islands of the group, ecological and sociological remarks, distribution of the beetle fauna by food-source groups, origin of the fauna, and classification of the Dytiscid subfamily Colymbetinae. There is a long bibliography.

A NEW GENUS AND NEW SPECIES OF MALAYSIAN REDUVIIDAE. (HEMPITERA).

By N. C. E. Miller, F.R.E.S., F.Z.S., F.E.S.S.A.

(*Commonwealth Institute of Entomology.*)

The new genus and species described herein were recovered by the writer during a short visit to Kuala Lumpur, Federation of Malaya, in September, 1945. I submitted them to my friend Dr. W. E. China, of the British Museum (Natural History). He very kindly arranged for their identification. This work was carried out by Mr. R. J. Izzard, also of the British Museum. My best thanks are due to both these workers.

The types will be presented to the British Museum.

Mr. Izzard has also pointed out to me the necessity of clarifying the position of the genus *Castra* Kirkaldy, under which genus I described several new species (1941, *J. F.M.S. Mus.* **18** : 601–773). The sequence of events is as follows :

1831. Hahn described his genus *Cimbus*, including one species, *C. productus* sp. n., which became the genotype by monotypy.

1832. Laporte described *versicolor* sp. n., which he included in the genus *Cimbus* Hahn.

1835. Burmeister (*Handbuch Ent.* **2** : 237) separated the two species, leaving *productus* as type of *Cimbus* Hahn, and making *versicolor* genotype of his new genus *Tiarodes* (= *Cimbus* Lap. *nec* Hahn).

1900. Kirkaldy (*Entomologist* **33** : 242) believed that Hahn's original description of the genus was invalid, because there was only one description for the genus and species together. In his view the earliest valid name was therefore *Cimbus* Lap. (type *versicolor*). For *productus* Hahn Kirkaldy proposed the name *Castra* (n.n. for *Cimbus* (Hahn) Burm., *nec* Laporte).

Kirkaldy, however, was wrong. Opinion 1 of the International Commission states that the designation of a type species constitutes an " indication " under Article 25, and so if a new generic name is proposed, and associated with only one species, the genus is valid without further description. Opinion 43 confirms this.

It is clear, therefore, that *Castra* Kirk. = *Cimbus* (Hahn) Burm. = *Cimbus* Hahn, genotype *productus* Hahn. Thus those species described by me under *Castra, loc. cit.*, must be referred to *Cimbus* Hahn.

Stenopodinae.

Canthesancus izzardi sp. n. (fig. 1).

Colour.—Segment 1 of antennae piceous, narrowly stramineous basally ; segment 2 piceous, stramineous basally, dark brown apically ; segment 3 dark brown ; narrowly black apically ; segment 4 stramineous, narrowly black basally. Eyes blackish. Head testaceous with a median longitudinal black stripe widening at ocelli, then becoming more

narrow to base. Pronotum testaceous faintly suffused with reddish, mostly on posterior lobe, and with a median, longitudinal blackish stripe ; sides blackish, except greater part of acetabula, testaceous ; spines dark piceous, those on anterior lobe with a yellowish suffusion basally. Meso- and metapleura greyish testaceous. Scutellum and spine black. Corium pale stramineous ; clavus suffused with fuscous, becoming greyish in apical half ; median and apical spots fuscous ; between the spots greyish ; membrane pale stramineous with suffused greyish spots and a semicircular fuscous spot. Wings pale stramineous, iridescent. Abdomen brownish ; connexivum of segments 4–6 with a pale stramineous

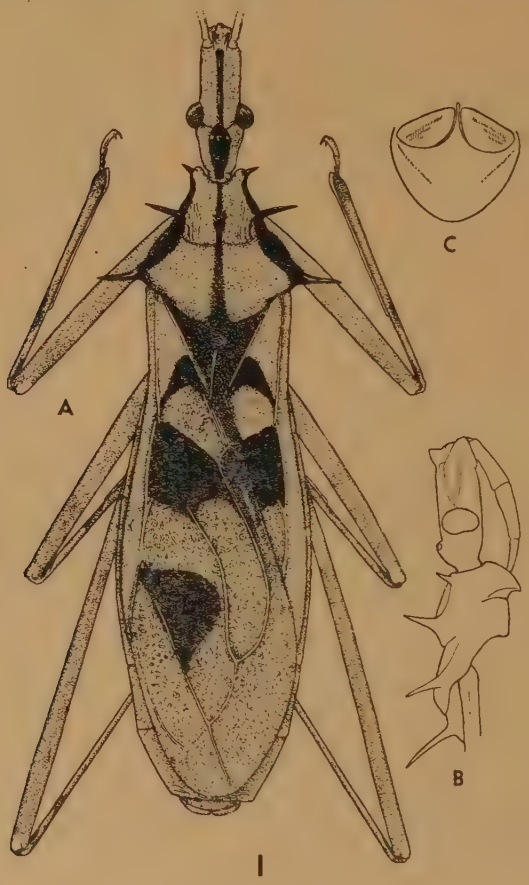

Fig. 1.—*Canthesancus izzardi* sp. n. (A) Whole insect. (B) Head and pronotum from side. (C) Male genital segment, terminal view.

spot ventrally ; segments 5 and 6 of connexivum almost entirely, segment 7 entirely black ; midventral carina black ; abdomen ventro-laterally with diagonal suffused yellowish spots and stripes. Femora stramineous with a wide, pale infumate annulation in apical half ; apically laterally with blackish suffusion ; tibiae suffused with piceous apically and with interrupted suffused piceous annulations in basal half ; tarsi brownish. Setae pale fulvous ; pubescence on pronotum greyish.

Structure.—Segment 1 of antennae, 7·90 mm. Eyes subreniform. Head a little shorter than pronotum. Ocelli separated by the width of an ocellus ; interantennal

projections rectangular; basal segment of rostrum about two-thirds as long as anteocular. Postero-lateral spines on anterior lobe of pronotum and lateral spines on posterior lobe long, acute. *Fossula spongiosa* on tibiae more than half as long as tibia.

Total length 25 mm.; hemelytra 15·50 mm.; greatest pronotal width (excluding spines) 4·5 mm.

1 ♂ (type), MALAYA: Kuala Lumpur, 9.xi.1941 (*N. C. E. Miller*).

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FIG. 2.—*Canthesancus exiguus* sp. n. (A) Whole insect. (B) Head and pronotum from side. (C) Apex of abdomen, female.

Allied to *C. pendleburyi* Miller (1941, *J. F.M.S. Mus.* **18**: 508). Differs in coloration, very long spines at anterior lateral angles of pronotum and shorter hemelytra.

This new species is dedicated to Mr. R. J. Izzard in recognition of the help he has given the writer on many occasions.

Canthesancus exiguus sp. n. (fig. 2).

Colour.—Segment 1 of antennae pale stramineous, black in apical half and with more than half of the lower surface black; segment 2 pale stramineous basally, submedially piceous, remainder brownish; remaining segments missing. Eyes black. Head dorsally

yellowish with a median, longitudinal blackish stripe extending to base and widening at ocelli, then narrowed; laterally, except postocular, greyish testaceous and with two longitudinal brown stripes; apical segment of rostrum dark brown. Pronotum dorsally greyish testaceous with dense yellowish pubescence and a median longitudinal black stripe which becomes brownish on posterior lobe; anterior lobe with an area on each side of median stripe devoid of pubescence except near the base and with a bifurcate area laterally in basal half and a subtriangular area behind lateral spine also devoid of pubescence; spines piceous; upper area of sides narrowly and a lateral stripe on posterior lobe dark brown; remainder of sides greyish with pale fulvous pubescence. Scutellum black; spine piceous. Hemelytra stramineous greyish with faint pinkish tinge; clavus dark fuscous becoming infumate towards apex; external margin narrowly pale stramineous; disc of corium with a large sub-hastate dark fuscous spot which extends into both internal and external cells of membrane; membrane with greyish maculation and a large triangular fuscous spot in external cell. Femora stramineous with a wide, suffused, brownish annulation in apical half and a piceous spot apically, laterally; tibiae pale stramineous with irregular suffused spots and a piceous annulation apically interrupted on external surface; tarsi brown. Connexivum with a small, intersegmental piceous spot; abdomen ventrally brownish with irregular black and brownish yellow spots and stripes.

Structure.—Segment 1 of antennae 5 mm.; segment 2, 10 mm.; remaining segments missing. Head a little shorter than pronotum; interantennal projections triangular, acute; ocelli separated by the width of an ocellus. Submedian lateral spines on anterior lobe of pronotum moderately long, acute and suberect; posterior lobe in anterior half strongly sinuate, carinate sulcate. Scutellar spine very long, feebly oblique. Hemelytra extending almost to apex of abdomen. *Fossula spongiosa* extending to about four-fifths of the length of the tibiae.

Total length, 24 mm.; hemelytra, 16 mm.; greatest pronotal width (excluding spines), 4·50 mm.

1 ♀ (type), Malaya: Cheras, nr. Kuala Lumpur, Feb., 1940 (*N. C. E. Miller*). (In fowl house.) Allied to *C. helluo* Stål. (1863, *Ann. Soc. ent. Fr.* (4) **3** : 44.)

Acanthaspinae.

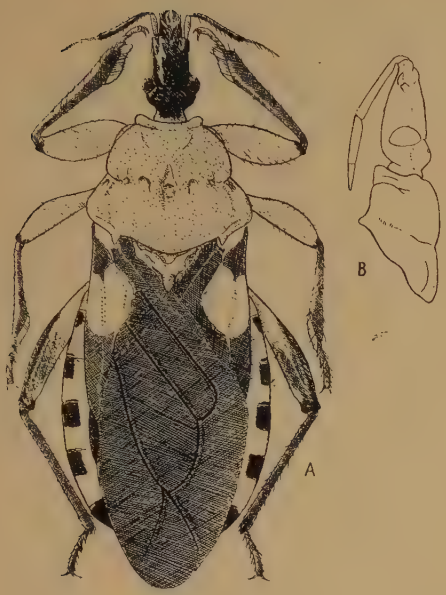
Tiarodes sakai[1] sp. n. (fig. 3).

Colour.—Segments 1 and 2 of antennae piceous, segment 2 paler; segments 3 and 4 stramineous. Eyes black. Head shining black, except laterally and base dorsally whitish yellow. Thorax coral red. Abdomen yellowish. Segments 2 and 3 and part of segment 4 of connexivum dorsally, segments 1–4 and segment 5, except laterally, suffused with red; segments 5 and 6 ventrally with a suffused piceous spot laterally basally on each side of midventer; connexivum with a quadrate black spot in basal half of each segment. Corium dull black with a small yellowish spot basally connected by a narrow yellowish stripe to a large yellowish median spot; membrane dull black; wings faintly infumate. Coxae, femora, coral red; anterior and median femora narrowly black apically; posterior femora dark piceous in apical half with a small yellowish area subapically on lower surface; tibiae and tarsi black. Setae fulvous on legs, piceous on antennae.

In the living insect the pale areas on head, corium and abdomen are white.

Structure.—Segment 1 of antennae 0·60 mm.; segment 2, 2·30 mm.; segment 3, 0·90 mm.; segment 4, 0·80 mm. Head a little shorter than pronotum; sides anteocular to base of antennal tubercles parallel; anteocular laterally in front and below antennal tubercles with a low, arcuate carina. Basal segment of rostrum not reaching anterior margin of eyes, subequal in length to remaining segments together. Anterior lobe of pronotum subequal in length to posterior lobe; produced portion of postero-

[1] The name of a hill tribe in Malaya.



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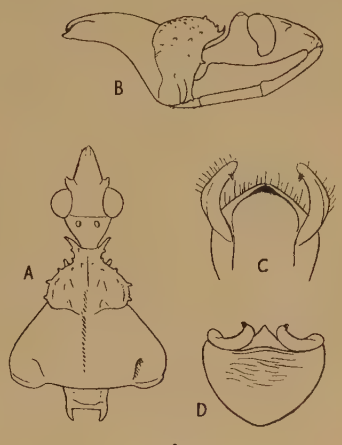

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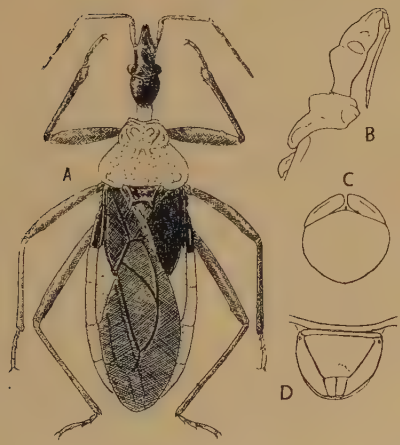

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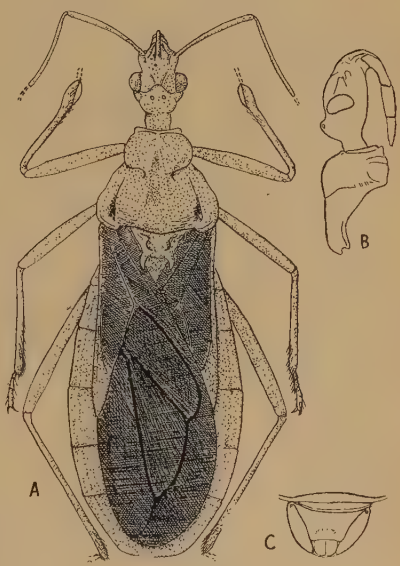

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FIG. 3.—*Tiarodes sakai* sp. n. (A) Whole insect. (B) Head and pronotum from side.

FIG. 4.—*Caecina affinis* sp. n. (A) Head and pronotum from above. (B) Head and pronotum from side. (C) Male genital segment, dorsal view. (D) Male genital segment, terminal view.

FIG. 5.—*Mendis mjöbergi* sp. n. (A) Whole insect. (B) Head and pronotum from side. (C) Apex of abdomen, female.

FIG. 6.—*Sciaphilocoris ornata* gen. et sp. n. (A) Whole insect. (B) Head and pronotum from side. (C) Male genital segment, terminal view. (D) Apex of abdomen, female.

lateral margin of posterior lobe acute; posterior lobe anteriorly laterally with feeble longitudinal sulci. Hemelytra extending just beyond apex of abdomen.

Total length, 21 mm.; hemelytra, 13·50 mm.; greatest pronotal width, 6·50 mm.

1 ♀ (type), Malaya: Boh Plantations, Cameron Highlands, 4000 ft. 24.xii.1940 (*N. C. E. Miller*).

Allied to *T. malayanus* Distant.

Ectrichodiinae.

Caecina affinis sp. n. (fig. 4.)

Colour.—Reddish, except clavus, area between veins, costal area of corium, membrane pale infumate. Setae fulvous.

Structure.—Segment 1 of antennae 1 mm.; remaining segments missing. Eyes reniform. Head a little shorter than pronotum; ocelli large, separated by less than the width of an ocellus. Anterior lateral spines on anterior lobe of pronotum widely divergent and curving upwards strongly; lateral margins of anterior lobe with two moderately long and one short tubercle. Scutellar spines acute curving inwards.

Total length, 9 mm.; hemelytra, 6 mm.; greatest pronotal width, 2·50 mm.

1 ♂ (type), Malaya: Klang-Bangi Rd. Forest Reserve, 16.v.40 (*N. C. E. Miller*). (In swampy jungle, at sea level.)

Apparently allied to *C. consimilis* Miller (1941, *J. F.M.S. Mus.* **18**: 631), but differs in the larger size, shorter basal segment of antennae, shorter basal segment of rostrum, shape of scutellar spines and genitalia.

Mendis mjobergi sp. n. (fig. 5).

Colour.—Brick red; posterior lobe of pronotum paler towards posterior margin. Corium, except costal area, brown. Tarsi stramineous. Setae pale fulvous.

Structure.—Segment 1 of antennae 1·70 mm.; segment 2, 2 mm.; remaining segments missing. Head subequal in length to pronotum; tylus moderately elevated, broadly rounded; vertex with feeble transverse sulci; distance between ocelli less than half the distance between an ocellus and an eye. Median sulcus on pronotum very deep, widening considerably posteriorly; posterior area of posterior lobe irregularly transversely carinate; apical projections of scutellum feebly curved. Membrane not differentiated from corium except at apex of costal area. Hemelytra not extending to apex of abdomen. Meso- and metasterna medially depressed and transversely sulcate. Segments 2–5 of the abdomen ventrally with two divergent sulci midventrally with a depression between them.

Total length, 10 mm.; hemelytra, 6 mm.; greatest pronotal width 2·50 mm.

1 ♀ (type) Sarawak: B. Gading Lundu (no date) (*E. Mjöberg*).

Allied to *M. pagdeni* Miller (1941, *J. F.M.S. Mus.* **18**: 637), but differs in the smaller size, the deeper median pronotal sulcus and lateral depressions, the sulcate area of posterior lobe of pronotum and the more slender apical projections of scutellum. In coloration *M. pagdeni* is somewhat darker and the costal area of the corium is of a deeper red. The membrane is fuliginous, not brown.

Sciaphilocoris gen. n.[2].

Size very small. Head longer than pronotum; anteocular porrect, lying in same plane as postocular. Antennae with six segments, inserted about half the distance from

[2] σκία = shade, φιλεῖν = to love, κορις = a bug

eyes to apex of head ; basal segment projecting beyond apex of head. Rostrum somewhat slender ; segment 2 curved, more than twice as long as basal segment ; basal segment not extending to antennal tubercles. Anterior lobe of pronotum with a deep median depression, on each side of which the lobe is conical. Scutellar spines thick. Hemelytra extending just beyond apex of abdomen. Femora somewhat incrassate, the posterior pair less so, subapically on lower surface with a feeble projection. Anterior tibiae without *fossula spongiosa*. Genotype *S. ornata* sp. n.

Sciaphilocoris ornata sp. n. (fig. 6).

Colour.—Head, except base, antennae black ; base of head yellowish ; rostrum piceous. Pronotum, pro-, mesopleura and sterna, base of scutellum, coral red ; metapleura and sterna, apical half and sides of scutellum, corium, except apical half of costa, basal segments of abdomen, blackish violaceous ; apical half of corium, remainder of abdomen, coral red. Membrane violaceous ; wings brownish stramineous, iridescent. Coxae, tarsi brownish ; femora and tibiae piceous.

Structure.—Segment 1 of antennae 0·50 mm. ; segment 2, 0·70 mm. ; remaining segments together 1·10 mm. Eyes moderately prominent, ovate. Head smooth, shining ; antennal tubercles moderately prominent ; transverse sulcus straight ; ocelli very small, narrowly separated, distance from the eyes subequal to that between the eyes ; postocular globose for about half its length, then cylindrical. Anterior lateral angles of pronotum feebly prominent, rounded ; median sulcus deep, extending almost the entire length of pronotum ; transverse sulcus with feeble longitudinal carinulae ; lateral depressions on posterior lobe deep. Principal veins of corium elevated.

Total length, ♂, 7·50 mm. ; ♀, 8 mm. Hemelytra, ♂, 4·30 mm. ; ♀, 4·50 mm. Greatest pronotal width, ♂, 1·50 mm. ; ♀, 1·70 mm.

2 ♂ (one of which the type), MALAYA : Boh Plantations, Cameron Highlands, 3500 ft., 4.xi.1941 ; 1 ♂, 2 ♀, same locality, 18.viii.1941 (*N. C. E. Miller*). (Under bark of dead trees.).

Allied to *Mendis* Stål (1859, *Ofvers. K. VetenskAkad. Förh.* **16** : 180). Differs in the elongate shape of the head, the long and slender rostrum, of which segment 2 is more than twice as long as segment 1, absence of *fossula spongiosa* and thick scutellar projections.

Xenorhyncocoris princeps sp. n. (fig. 7.)

Colour.—Dark piceous. Ocelli light brown. Segments 1 and 2 of antennae piceous, segments 3 and 4 stramineous ; segment 3 basally, segment 4 apically brownish. Rudiments of wings light brown. Rostrum and legs piceous. Apical margin of 7th abdominal segment dorsally and part of segment 8 ventrally dull luteous. Tarsi brown ; claws piceous. Abdomen with a pale piceous area laterally on segments 2–6. Setae on tibiae and tarsi fulvous.

Structure.—Segment 1 of antennae 4 mm. ; segment 2, 5 mm. ; segment 3, 1·50 mm. ; segment 4, 2 mm. ; a supplementary segment present between segments 2 and 3. Head twice as long as pronotum ; ocelli small, indistinct. Basal segment of rostrum reaching anterior margin of eyes. Head, particularly laterally and ventrally, sinuately, shallowly sulcate. Pronotum deeply, medially depressed on posterior lobe ; lateral depressions irregularly transversely carinate. Scutellar projections short, bluntly conical. Abdomen ventrally with longitudinal intersegmental carinulae.

Total length, 32 mm. ; greatest pronotal width, 5·80 mm.

1 ♀ (type) MALAYA : Ulu Tinggi, 11–12th mile rly., Rantau Panjang, Selangor, Feb., 1941. Goolden coll. (In swampy jungle.)

Allied to *X. caraboides* Miller (1938, *Proc. R. ent. Soc. Lond.* (B) **7** : 135). Differs in its smaller size, much shorter head, narrower thorax and abdomen. The basal segment of the rostrum is much less sinuate and reaches the anterior margin of the eyes only ; scutellar projections more obtuse ; produced portion of prosternum not quite reaching the coxal cavities of the mesosternum.

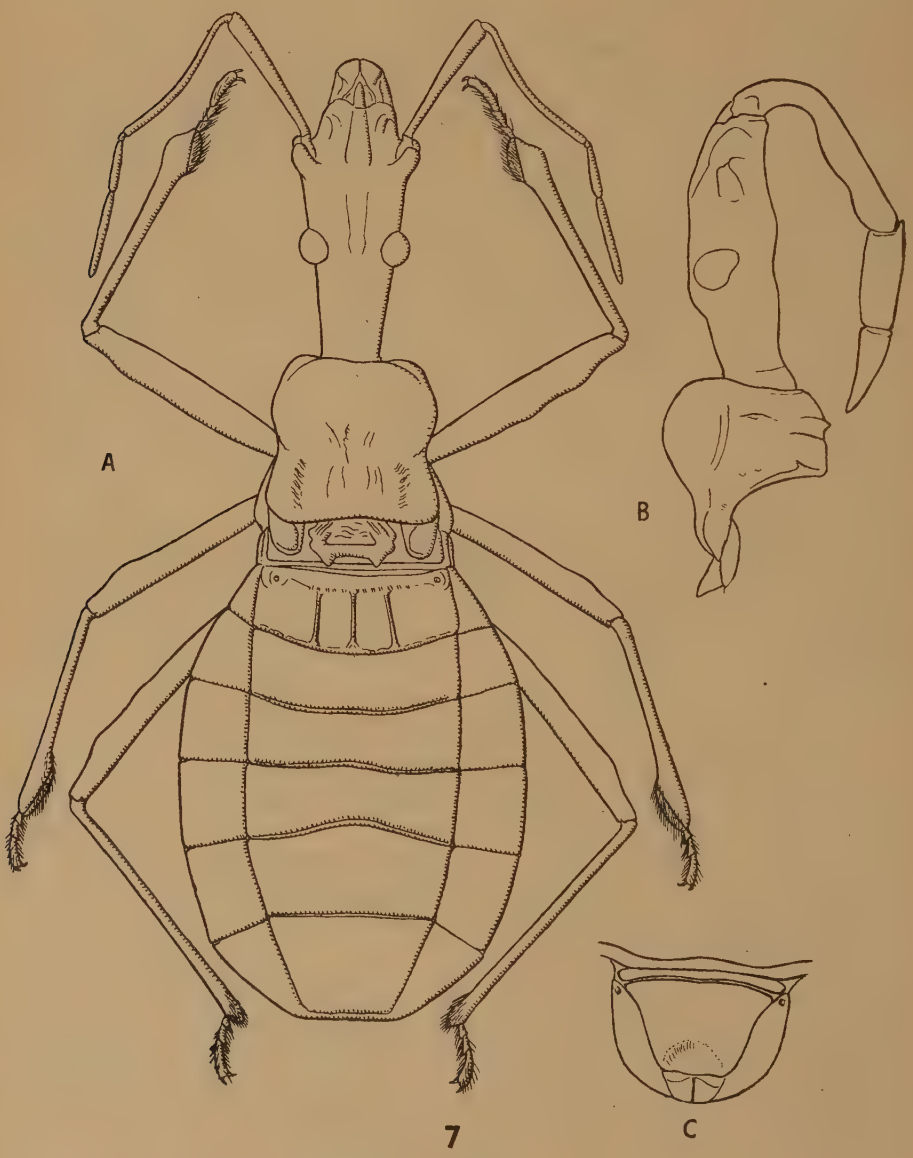


FIG. 7.—*Xenorhyncocoris princeps* sp. n. (A) Whole insect. (B) Head and pronotum from side. (C) Apex of abdomen, female.

HARPACTORINAE.

Biasticus obfuscatus sp. n. (fig. 8).

Colour.—Antennae, head black, except base, gular region, basal part of anteocular and an interocellar spot, whitish. Pronotum dark testaceous. Pleura and sterna, coxae dark brown. Corium black; membrane and wings hyaline, pale yellowish. Abdomen light brown. Connexivum of segment 2 black, of segments 3, 4 and 8 with a quadrate piceous marginal spot, of segment 5 piceous; segments 5 and 6 ventrally with a broad transverse piceous stripe. Prosternum light brown; meso- and metapleura and sterna dark brown; mesopleura with a yellowish spot posteriorly. Femora and tibiae piceous; tarsi light brown. In the living insect the light brown areas are whitish yellow.

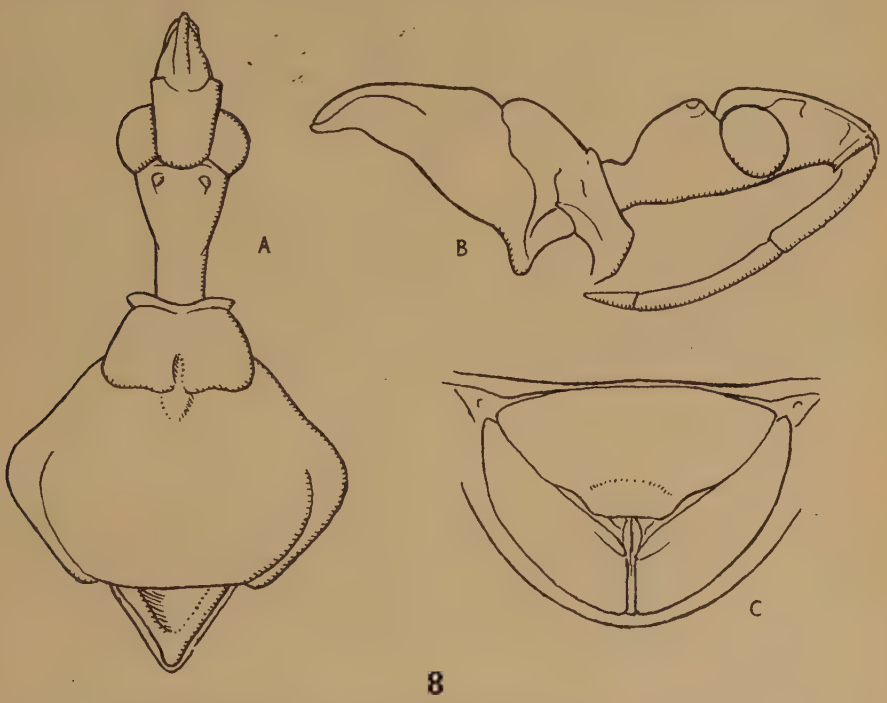


FIG. 8.—*Biasticus obfuscatus* sp. n. (A) Head and pronotum from above. (B) Head and pronotum from side. (C) Apex of abdomen, female.

Structure.—Basal segment of antennae 3·50 mm.; segment 2, 1·10 mm.; segment 3, 1·70 mm.; segment 4, missing. Head subequal in length to pronotum; ocelli feebly elevated; width between them equal to interocular distance. Basal segment of rostrum extending to middle of eyes, subequal in length to segment 2.

Total length 9 mm.; hemelytra, 6·60 mm.; greatest pronotal width, 2·60 mm.

1 ♀ (type), MALAYA: Kuala Tahan, Pahang, 22.xi.1940 (*N. C. E. Miller*). (In jungle.)

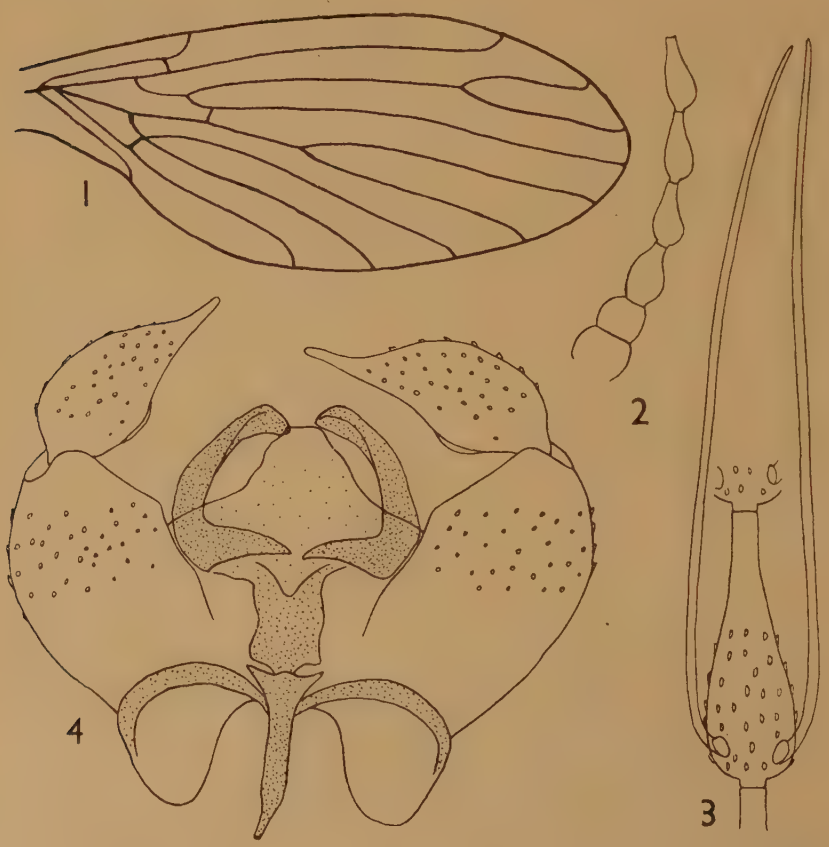
Allied to *B. eburneus* Miller (1941, *J. F.M.S. Mus.* **18**: 792). Differs in coloration, length of basal segment of antennae, length of basal segment of rostrum and slightly smaller size.

TWO NEW ETHIOPIAN SPECIES OF PSYCHODIDAE (DIPTERA).

By Paul Freeman, M.Sc.

(*British Museum, Natural History.*)

These two species were amongst material sent by Dr. Wanson, of the Belgian Congo Medical Service, to Dr. Parrot of the Institut Pasteur, Algiers; Dr. Parrot sent them on to me for determination and has very generously presented the types to the British Museum (Nat. Hist.). This is the first record of a species of *Trichomyia* from the Ethiopian Region. All the specimens of both species were received mounted on slides and so the body coloration and scale pattern cannot be described.



Figs. 1–4.—*Trichomyia piricornis* sp.n. (1) Wing; (2) base of antenna; (3) ninth antennal segment of ♂; (4) ♂ genitalia.

Trichomyia piricornis sp. n.

Basal antennal segments pyriform, ascoids very long, simple, anterior fork of the wing short, styles of the male genitalia swollen basally and contracted apically.

♂♀.—Wing length 2·0 mm.

♂.—Eyes more or less rounded, well separated; antennae broken in all the male specimens available, but presumably 15-segmented as in the female, basal flagellar segments pyriform (fig. 2), those nearer the apex more elongate (fig. 3); ascoids very long and filiform about two and a half times as long as the segment (fig. 3).

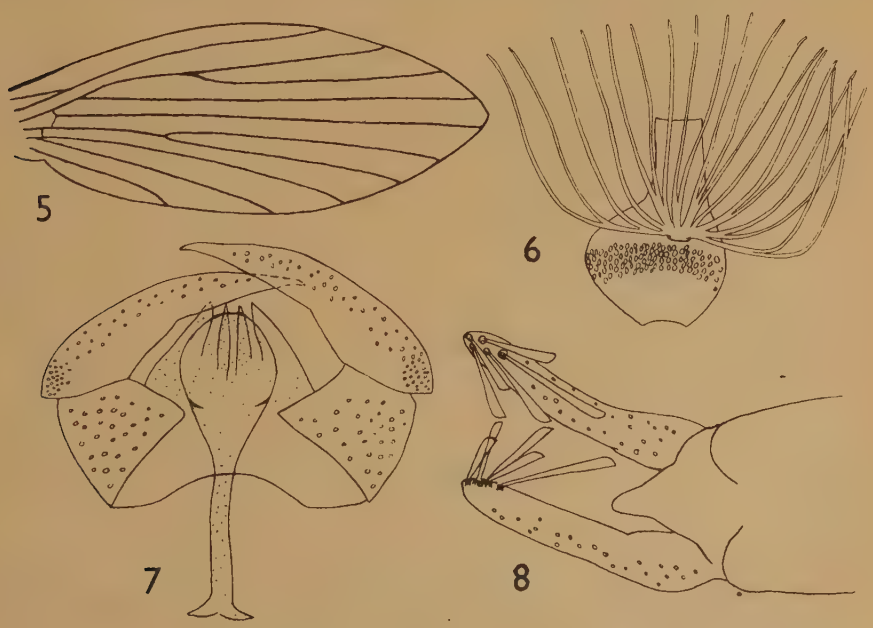
Wings rounded apically, fairly normal for the genus (fig. 1), but anterior fork short, little more than half as long as posterior fork, both R_1 and R_2 very definitely turned up at their apices.

Cerci simple, oval, more or less pointed; styles rather shorter than coxites (fig. 4), basally bulbous, strongly contracted apically; aedeagus large and membranous with a pair of sclerotized clasper-like parameres.

♀.—Resembles male in general features. Antennae 15-segmented, apical "button" probably present; ascoids shorter, but still nearly twice as long as segments; ovipositor short, cerci almost round (perhaps flattened in mounting ?), subgenital plate seen in side view, apparently truncated.

Holotype, male, Belgian Congo: District of Lake Leopold II, Luna, 1945 (*Crosara*). Paratypes, 3♂, 1♀, same date as holotype; 1♀, same district, Bongolokoro, vii.1945 (*Crosara*).

This species clearly belongs to the genus *Trichomyia*, but it differs from the other species so far described in having the basal antennal segments pyriform instead of elongate or cylindrical. The length of the ascoids, the shortness



Figs. 5–8.—*Telmatoscopus flagellifer* sp.n. (5) Wing; (6) fifth antennal segment of ♂; (7) ♂ genitalia; (8) cerci of ♂.

of the anterior fork and the shape of the male clasper serve to distinguish it from *T. urbica* Curtis, the Palaearctic species.

Telmatoscopus flagellifer sp. n.

Eye bridges of male meeting, ascoids subdivided into about 20 filaments, male styles wedge-shaped, aedeagus symmetrical, cerci with five retinacula.

♂.—Wing length 1·6 mm.

Eye bridges three facets wide, meeting for their complete width ; antenna 16-segmented, 16th segment smaller than 15th, which has a very short neck, 16th segment with long cylindrical apiculus, basal segments bulging to one side ; ascoids borne in pairs on segments 1–6 of flagellum, each one of a pair consisting of about 20 fine filaments, single or in pairs or threes (fig. 6).

Wing venation (fig. 5) fairly normal for the genus ; anterior fork rather distal to posterior fork, R_4 meeting costa anterior to wing tip, R_5 meeting it posterior to wing tip ; dark spots probably present at ends of most veins, as wing shows stains at these places.

Hypopygium characteristic (figs. 7 and 8) ; cerci with a conical projection between, each is slightly bent and bears five blunt-ended retinacula ; claspers much longer than coxites, wedge shaped ; aedeagus symmetrical, in appearance club-shaped with four short pointed appendages.

♀.—Unknown.

Holotype, male, Belgian Congo : Coquilhatville, 1946 (*Wolfs*).

Though the ascoids are not unlike those of *T. fuscus* Tonnoir (1939, *Ruwenzori Exped.*, 1934–5, **1** (4) : 65–6), the two species are readily separable by the form of the genitalia and by the wing venation. In *T. fuscus* the styles are short and blunt and the cerci lack retinacula ; the anterior wing fork is clearly basal to the posterior and R_5 runs into the wing tip.

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